HINDUSTAN ZINC
Zinc & Silver of India

# Sustainability Framework

## MANAGEMENT STANDARD

# Incident Reporting, Classification and Investigation

Hindustan Zinc Limited

SAFE SMART SUSTAINABLE

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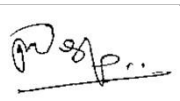
|---|---|---|---|
| **Standard Title:** | **Incident Reporting, Classification and Investigation** | **Date of Issue:** | **16/08/2025** |
| **Standard:** | HZL/CORP/SUST/MS 11 | **Revision:** | V.1 |

**Document Issue and Revision History**

| DATE | REVISION NUMBER | CHANGE SUMMARY |
|---|---|---|
| **16/08/2025** | v.1 | Initial issue |

| | |
|---|---|
| **Authorised** | **Pradeep Singh** |
| **Signature** |  |
| **Position:** | Chief HSE & Sustainability |

**Confidentiality**

# Contents

## 1. Purpose

The purpose of this Management Standard is to describe the arrangements and requirements for the reporting, classification, escalation and investigation of incidents, which are crucial processes to enable HZL to understand the effectiveness of its risk management programmes and to ensure that the organisation learns lessons to avoid repeat incidents. This standard has been adopted from the parent company Vedanta's Sustainability framework.

## 2. Scope

This Management Standard is mandatory and applies to all HZL subsidiaries, operations and managed sites, including new acquisitions, corporate offices and research facilities and to all new and existing employees. This Standard is applicable to the entire operation lifecycle (including exploration and planning, evaluation, operation and closure).

## 3. Definitions

Definitions of key terms and concepts used in this document are shown in the following table.

| Term | Definition |
|---|---|
| Cause | Event or condition without which the outcome / incident could not have occurred. |
| Contributing Factor | Event or condition that is partly responsible for an incident / outcome but without which the outcome / incident could still have occurred. |
| Disease | An abnormal condition or disorder of body functions or systems caused by acute or chronic exposure to agents, toxins, pathogens or other factors. |
| Environment | Surroundings in which an Organization operates including air, water, land, natural resources, flora, fauna, humans and their interrelationship. |
| Environment condition | State or characteristics (attributes) of the environment at certain point in time |
| Environment Incident | Elements of an organizations' activities that interact with the environment and cause an environmental impact(s). |
| Environmental Impact | Change to the environment or environmental conditions wholly or partially resulting from an environmental incident. |
| Fatality | The death of a worker as a direct result of an occupational injury or disease. |
| Incident Management Database & Reporting System | The electronic database deployed by into which all data associated with incidents is stored and can be extracted in the form of various reports; including the Monthly Incident Report. |
| HIPO (High Potential Incident) | An actual Health, Safety, Environment or Community event or a near miss with the realistic potential to result in:<br>• A fatality or permanently disabling injury<br>• A category 5 health, environment, social or labour event |
| Incident | An event or chain of events which caused or could have caused injury, illness, loss of assets or potential or actual damage to people, the environment or reputation. |
| Injury | Temporary or permanent damage to tissue, muscle or bone typically caused by an identifiable event. |

| Term | Definition |
|---|---|
| Investigation | A systematic and structured analysis of an incident and the events and conditions leading up to it, with the aim of (i) identifying all contributing factors that allowed that incident to occur, and (ii) proposing effective corrective and preventive actions to prevent its recurrence. |
| Key Performance Indicator | A specific parameter that provides information about HZL's operational and management performance. |
| Lost Time Injury | Any occupational injury or disease that results in the worker's inability to perform routine work functions on the next calendar day after the injury. Inability to perform routine work functions includes cases where:<br>a) The employee was assigned to another job on a temporary basis; or<br>b) The employee worked at a permanent job less than full time; or<br>c) The employee worked at his or her permanently assigned job but, due to the job-related injury, was physically or mentally unable to perform his or her routine work functions. Routine work functions are considered as those that the employee would be expected to perform at least once per week. |
| Monthly Incident Report | A monthly report produced by all HZL business-units that includes details of all incidents that have occurred in the month. The data for this report is extracted from the Incident Management Database & Reporting System. |
| Near miss (or "near hit") | An event that, while not causing harm, had the potential to cause injury, ill health, environmental impact or property damage. A near-miss is an incident. |
| Occupational injury or disease | An injury or disease that results from work activities occurring in locations that are under the control of the employer or direction of the employer, regardless of location. |
| Operation(s) | A location or activity that is operated by a HZL Company and its subsidiaries. Locations could include exploration activities, mines, smelters, refineries, wind farms, offices including corporate head offices and research and development facilities. |
| Recordable case | Any fatality, lost time injury or medical treatment case. |
| Recording Boundaries | Generally, any situation where there is a work relationship and an event occurs from an exposure in the workplace. See section 4.4 (c), (d) and (e) for detailed determination. |
| Remediation | Recovery of an environmental incident consistent with regulatory requirements and environmental norms. |
| Restricted Work Injury | See: Lost Time Injury |
| Stakeholder | Persons or s that are directly or indirectly affected by a project as well as those that may have interests in a project and/or the ability to influence its outcome, either positively or negatively. This can refer to shareholders, lenders, employees, communities, industry, governments and international third parties. |
| Top Management | All managers, and their line reports, that report directly to the most senior manager who has ultimate accountability at a HZL operation (who may |

| Term | Definition |
|---|---|
| | also be a senior manager of one of HZL's subsidiary companies). A top management structure may also exist at the business-unit level and HZL Corporate level. |

## 4. PROGRAMME REQUIREMENTS

All HZL subsidiary companies and operations are required to follow the requirements listed below with regards to incident reporting, classification, escalation and investigation.

### 4.1. General Requirements

Operations shall implement and maintain procedures and other arrangements for the effective reporting, classification, escalation, investigation, closure and communication of incidents and near misses.

These requirements also apply to incidents involving business partners directly commissioned by, or under the direction of, HZL whilst they are on HZL premises or engaged in off-site activities controlled by HZL. This normally excludes activities on the business partner's own premises.

Where incidents occur on HZL premises and when the HZL Safety Management System applies, then incident reporting and subsequent investigations shall be managed in accordance with this Standard or equivalent Standards as defined in any Joint Venture Agreement.

It shall be ensured that personnel have the necessary competencies, appropriate to their role in the process (lead investigator/team member), to be able to conduct effective incident investigation and root cause analysis. This shall include formal training where necessary. See also the HZL Management Standard MS6 on *Competency, Training and Awareness*.

### 4.2. Initial Incident Actions

a) Procedures shall include mechanisms to ensure the prompt reporting of incidents.

b) Procedures shall identify those that are to be informed of an incident:

   i. An incident shall be reported to the relevant business or site personnel on the same work day on which it occurs (or is discovered).
   ii. Dependent on the incident classification, Corporate shall be informed of incidents within the time period stated in Appendix 2.

c) In the case of a Category 5 and 5A incident, work shall be stopped, or additional controls implemented to ensure the safe continuation until the incident is investigated, risk controls reviewed, and preventive actions implemented.

d) Procedures shall ensure compliance with statutory reporting requirements.

### 4.3. Incident Classification and Escalation Steps

Incidents shall be categorized in accordance with Appendix 2. The Incident Category shall be determined by the highest category of Severity Criteria. Each incident shall be:

- Reported by the actual severity
- Investigated by the maximum reasonable consequence.

## 4.4. Safety & Health Incidents

a) An injury or health impact is a Recordable Case if:

1. A work relationship is established regardless of whether the injury was foreseeable, preventable or related to a specific job or task
2. It occurs on company premises, except in an employee's "off-work" time - see points 9 & 10 below
3. It occurs when travelling for a work-related purpose, except in an employee's "off-work" time - see points 9 & 10 below

b) An injury is not a Recordable Case if:

4. It did not result from an event or exposure in the work environment
5. There is an aggravation of a previous injury that was not caused by a new incident
6. The injury results from a medical condition that is not work related
7. Preventative treatment is provided but there is no specific injury
8. An employee alleges an injury but there is no substantive or medical evidence to support the allegation
9. The injury occurs during "off-work" time at company-operated recreational facilities/events or parking lots, unless performing company work at these facilities
10. The employee is travelling on company business but has established a "home away from home", e.g. in a hotel

c) The ICMM guideline "Health and Safety Performance Indicators" is used to assist the final determination –see: https://www.icmm.com/en-gb/guidance/health-safety/performance-indicators

d) For any uncertainty or dispute the final determination will be made by the HZL Head HSE & Sustainability.

e) It should be noted that the HZL classification definitions may differ from those used in worker's compensation, local Factory Acts or similar.

## 4.5. Investigation

**Safety Incidents Investigation:**

- For Safety Incidents falling in the category of Cat. 5, 5A or High Potential Cat. 5A incidents (in accordance with Appendix-2), ICAM (Incident Cause Analysis Method) mentioned in Appendix-4 shall be followed for Incident Investigation.
- For all other Safety Incidents (Cat. 1,2,3,4, HIPO Cat. 5) site-specific investigation methods shall be followed for Incident Investigation.
- HSES Team may choose a Cross-Functional Investigation Team for all Critical Cat. 5 HIPOs that shall be investigated with ICAM methodology.

**Health / Environment / Social / Legal / Labour Incident Investigation:**

a) Procedures shall specify the arrangements for the investigation of incidents, including:

i. Composition of investigation teams:

- For any Category 5 incident the Lead Investigator as defined in "GN01 – Incident Investigations" shall be independent of the business in which the event occurred
- For any other investigation, the team will vary depending on the actual/potential consequence of the incident.

ii. The investigation team must comprise individuals competent to complete the investigation. The local Supervisor(s) would typically be expected to be involved in all incident investigations. Area, line and site management would typically be expected to lead and/or participate in higher category incidents.

iii. Roles, responsibilities and authorization levels.

iv. Measures to ensure that legal defenses are not compromised during the initial or subsequent management/investigation of an incident.

v. Mechanisms / methodologies / tools to establish the incident Causes and Contributory Factors.

vi. Category 5 incidents and HIPOs shall be investigated using the ICAM methodology defined in appendix 4..

vii. Reporting timescales and format (note; the formal written report should be produced within 28 days of the incident where feasible).

b) Prioritized corrective and preventive actions shall be identified to address the Causes. These shall be supported by clear responsibilities for completing the actions together with allocated timescales and resources. See also the HZL Management Standard MS13 on *Corrective and Preventive Action Management*.

c) Proposed corrective and preventive actions including identified control measures shall be reviewed and approved by senior management. They shall be subject to a risk assessment to ensure that (i) they are appropriate to the nature and scale of the hazards and associated risks and (ii) that additional risks are not unwittingly being introduced into the organization.

### 4.6. Closure

a) A formal system shall be in place to ensure that the status of corrective and preventive actions is monitored through to closure.

b) Confirmation of the effectiveness of corrective and preventive actions shall be undertaken.

### 4.7. Communication

a) Procedures shall ensure that lessons learned from incident investigations are documented and communicated to relevant HZL employees and, where appropriate, contractors.

b) Category 5 & 5A incidents and Category 5 & 5A HIPOs shall be communicated across relevant HZL business-units by Corporate HSE & Sustainability.

c) Systems shall be in place to manage the external communication of information relating to incidents where this is needed.

d) Systems shall be in place to review and, where appropriate, act upon incident information received from other HZL sites/companies.

### 4.8. Review

a) The senior management of HZL shall undertake and document a periodic review that shall be at least annual of incident and investigation data to identify any trends, assess the effectiveness of current risk controls, and establish whether any additional measures are necessary. This may form part of a broader periodic management review.

b) Incident classification, reporting and investigation procedures shall be periodically reviewed to ensure that they remain current, relevant to the business, effective and in alignment with relevant HZL policies and standards.

c) The HZL CEO and Head HSE & Sustainability shall review all Class 5 & 5A incidents with the CEO of the impacted business in person or by Telepresence within one month of completion of the final investigation report.

d) Any Class 5 & 5A incident report will be submitted to the Board of Directors and the Sustainability Committee for review.

e) Consequence actions arising from Class 5 & 5A incidents will be reviewed for fairness and consistency by the Ethics Committee specifically expanded to include the Head HSE & Sustainability for this purpose.

## 5. ROLES AND RESPONSIBILITIES

HZL subsidiaries, businesses, operations and sites shall ensure that roles and responsibilities for implementing and complying with this Standard are allocated. Key responsibilities shall be included in job descriptions, procedures and/or other appropriate documentation.

## 6. COMPLIANCE AND PERFORMANCE

Each HZL operation shall ensure they comply with the requirements of this standard. Failure to comply may result in severe consequences to all involved, particularly if incidents are not reported or not reported properly in accordance with this Standard.

Performance against meeting the requirements of this Standard shall be assessed periodically, documented and, where required, reported to HZL Corporate. The assessment of performance shall include setting and reporting on key performance indicators (KPIs) where these have been established at HZL Company or local level and which meet the requirements as set out in the *Sustainability Data Management Technical Standard*.

The evaluation of performance shall include, as a minimum, confirmation that:

- Incidents are being reported and acted upon.
- Incidents are being correctly classified.
- Investigations are being carried out by competent personnel – including the active involvement of management – using appropriate methodologies.
- Investigations are identifying basic and underlying causes and contributory factors.
- Corrective and preventive actions, appropriate to the nature of hazards and level of risk, are being identified and implemented.
- The effectiveness of corrective and preventive actions is being assessed.
- Lessons arising from incidents are being communicated inside and, where appropriate, outside of HZL

## 7. SUPPORTING INFORMATION

| | Description |
|---|---|
| ICMM (International Council of Mining and Metals) – Health & Safety Performance Indicator Definitions | The ICMM have produced a detailed set of H&S indicators and supporting definitions which have been incorporated into the HZL Sustainability Governance System and supporting Standards<br><br>https://www.icmm.com/en-gb/guidance/health-safety/performance-indicators |

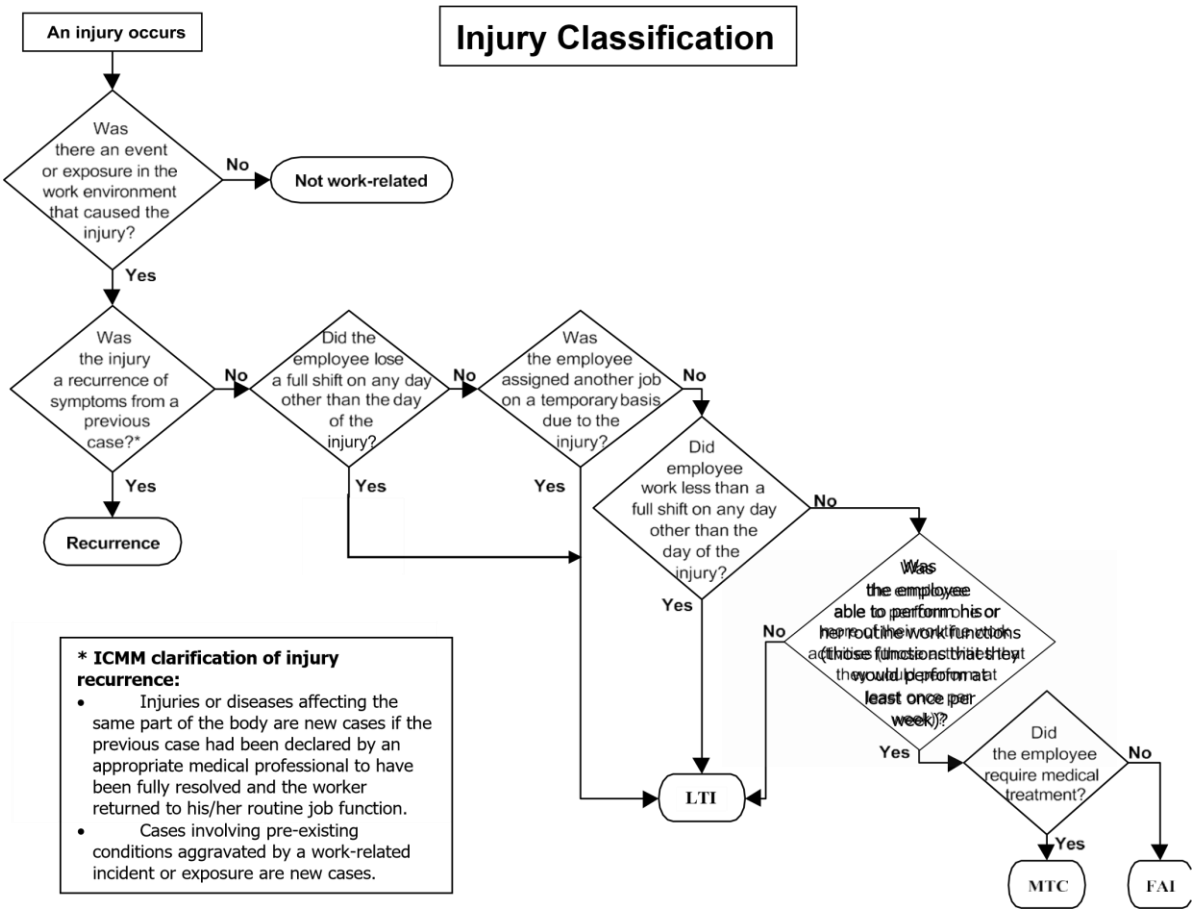
## 8. REVIEW

This Management Standard shall be periodically audited and reviewed to determine its accuracy and relevance with regard to legislation, education, training and technological changes. In all other circumstances, it shall be reviewed no later than 24 months since the previous review.

## 9. REFERENCES

| Doc. Ref. | Title |
|---|---|
| MS 01 | Leadership, Responsibilities and Resources |
| MS 06 | Competency, Training and Awareness |
| MS 13 | Corrective and Preventive Action Management |
| TS 13 | Emergency and Crisis Management |

# Appendix 1 – Incident Classification flowchart




**Medical Treatment Case (MTC) Definition**

Medical treatment is defined as occurring when an injury or disease requires a higher degree of patient management to ensure a full recovery. At a minimum, the following are considered medical treatment beyond first aid (regardless of the professional status of the person providing the treatment):

- Suturing of wounds
- Treatment of fractures
- Treatment of bruises by drainage of blood
- Treatment of second and third degree burns
- Providing prescription drugs or non-prescription drugs at prescription dosage to manage symptoms.

**First Aid Injury (FAI) Definition**

First aid describes a particular level of treatment for a work-related injury. First aid means the following treatments, regardless of the professional status of the person providing the treatment:

- Visit(s) to a health-care provider for the sole purpose of observation
- Diagnostic procedures including the use of prescription medications solely for diagnostic purposes
- Use of non-prescription medications including antiseptics at non-prescription strengths
- Simple administration of oxygen
- Administration of tetanus/diphtheria shot(s) or booster(s)
- Cleaning, flushing or soaking wounds on skin surface
- Use of wound coverings such as bandages, gauze pads, etc.
- Use of hot and cold therapy (e.g. compresses, soaking, whirlpools, non- prescription creams/lotions for local relief except for musculoskeletal disorders)
- Use of any totally non-rigid, non-immobilizing means of support (e.g. elastic bandages)
- Using temporary immobilization devices while transporting an accident victim (e.g. splints, slings, neck collars, backboards etc.)
- Drilling of a nail to relieve pressure or draining fluid from a blister
- Use of eye patches
- Removal of foreign bodies embedded in the eye only if irrigation or removal with cotton swab is required
- Removal of splinters or foreign material from areas other than the eyes by irrigation, tweezers, cotton
- swabs or other simple means
- Using finger guards
- Using massages
- Drinking fluids for relief of heat stress.

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# Appendix 2 – Incident Classification & Reporting

| Incident Category | Definition | Severity Criteria | | For Safety Incidents | | For Environmental Incidents | |
|---|---|---|---|---|---|---|---|
| | | Safety | Environment | Actions | Timing | Escalation Matrix | Timing |
| Cat. 1 | Negligible | First Aid Case | Incident that have localized short term impact on environment within the section of our premises<br>(or)<br>Unlikely to be of concern to internal or external stakeholders<br>(or)<br>Remediation is not required, or clean-up is quick and easy<br>(any one of the above)<br>Examples:<br>• Oil spillages with in shop floor<br>• Localized dust/fume leakage<br>• Solid waste/ garbage at undesignated place<br>• Used oil drums without secondary containment<br>• Solid waste mixed with hazardous waste/ e-waste<br>• Unintended minor release of natural resource with in section of plant | 1. Manage locally in accordance with local procedures.<br>2. Statutory report to authorities (as required by local regulatory agencies)<br>3. Report monthly (only numbers) in the Monthly Incident Report | See Local Procedures<br>Statutory Requirement<br>Monthly | Section Head/Area-In Charge/Shift In-Charge & Respective Environment In-Charge | **Notification time**Reporting on the same day in the system.<br>**Investigation Time Period-** Corrective actions shall be initiated. |

| Incident Category | Definition | Severity Criteria | | | Action | Timing |
|---|---|---|---|---|---|---|
| | | Health | Social / Legal | Labour | | |
| Cat. 1 | Negligible | Irritation, small / minute lesions. | Complaints - Local complaints in company office (written or verbal) from external sources. | Complaints - Concern / Grievances restricted to local complaints in company office (written or verbal) by Employees / Contractors. | 1. Manage locally in accordance with local procedures. | See Local Procedures |
| | | | | | 2. All incidents recorded in the Incident Management Database & Reporting System | 2 Weeks |
| | | | | | 3. Statutory report to authorities (as required by local regulatory agencies) | Statutory Requirement |
| | | | | | 4. Report monthly in the Monthly Incident Report | Monthly |

| Incident Category | Definition | Severity Criteria | | For Safety Incidents | | For Environmental Incidents | |
|---|---|---|---|---|---|---|---|
| | | Safety | Environment | Actions | Timing | Escalation Matrix | Timing |
| Cat. 2 | Minor | Medical Treatment Injury | Incident that have localized short term impact on environment within the premises<br>(or)<br>Likely to have concern for internal stakeholders but not for external stakeholders<br>(or)<br>Require minor intervention for remediation<br><br>Examples<br>Oil/chemical spillages leading to drain/ wastewater storage pond<br>Hazardous waste storage at undesignated location<br>Leakages/ spillages of untreated wastewater inside plant<br>Water leakage persisting beyond a day<br>Accidental put off of flare/cold venting<br>Fugitive dust generation from tailing dam/ ash dyke/ waste dump (not affecting community) | 1. Manage locally in accordance with local procedures. | See Local Procedures | Section Head/Area-In Charge/Shift In-Charge & Respective Environment In-Charge | **Notification time-** Reporting on the same day in the system.<br>**Investigation Time Period-** Corrective actions shall be initiated. |
| | | | | 2. Statutory report to authorities (as required by local regulatory agencies) | Statutory Requirement | | |
| | | | | 3. Report monthly (only numbers) in the Monthly Incident Report | Monthly | | |

| Incident Category | Definition | Severity Criteria | | | Action | Timing |
|---|---|---|---|---|---|---|
| | | Health | Social / Legal | Labour | | |
| Cat. 2 | Minor | Reversible health effects occurring immediately after exposure, e.g. acute irritations / dermatitis / sneezing / watering of eyes / cough / redness of eyes or skin / heat exhaustion / heat cramp etc. | Complaints - Receipt of multiple complaints on same topics from external sources (individuals) | Complaints - Receipt of multiple complaints on same topics by Employees / Contractors | 1. Manage locally in accordance with local procedures. | See Local Procedures |
| | | | Protest - Minor protest (single family / small less than 5 people) **with no work stoppage** | Protest Type - Minor protest (small less than 5 people) | 2. All incidents recorded in the Incident Management Database & Reporting System | 1 Week |
| | | | Company gate closed, but no work stoppage | | 3. Report to Social Performance Manager (SPM)<br>4. Report to BU ExCo, BU Corp Comm | 0 hours<br>Within 24 hours |
| | | | Coverage - Minor / adverse local public or media attention | Coverage - Minor / adverse local public or media attention | 5. Statutory report to authorities (as required by local regulatory agencies) | Statutory Requirement |
| | | | | | 6. Report monthly in the Monthly Incident Report | Monthly |

| Incident Category | Definition | Severity Criteria | | For Safety Incidents | | For Environmental Incidents | |
|---|---|---|---|---|---|---|---|
| | | Safety | Environment | Actions | Timing | Escalation Matrix | Timing |
| Cat. 3 | Moderate | Lost Time Injury due to Restricted Work | Incident likely to cause shortterm impact on environment (inside/outside premises) (or)<br>Likely to be of concern to internal stakeholders/ external stakeholders or attract local media coverage (or)<br>Remediation is required and likely to take less than 1 months<br>Examples:<br>• Intermittent emissions beyond norms but no immediate health impact to workers/ communities<br>• Hazardous waste disposal on land (unlined) inside the plant boundary<br>• Leachate generated from hazardous waste storage reaching to soil<br>• Fugitive dust generation from tailing dam/ ash dyke/ waste dump affecting nearby communities<br>• Unintended release of oil/ hazardous chemical on land. | 1. Manage locally in accordance with local procedures. | See Local Procedures | Section Head/ Area-In Charge & Environment Head, | **Notification time-** Reporting on the same day in the system.<br>**Investigation Time Period-** Investigation within 5 days |
| | | | | 2. Report one pager information by email to the HZL Company CEO, COO, Head HSES, | Monthly | | |
| | | | | 3. Statutory report to authorities (as required by local regulatory agencies) | Statutory Requirement | | |
| | | | | 4. Report monthly in the Monthly Incident Report | Monthly | | |

| Incident Category | Definition | Severity Criteria | | | Actions | Timing |
|---|---|---|---|---|---|---|
| | | Health | Social / Legal | Labour | | |
| Cat. 3 | Moderate | Adverse health effects that are not permanent and not life-threatening involving skin or peripheral nervous system / respiratory system / skin / acute exfoliative lesions / exfoliative dermatitis / acne etc.<br>Exposure to hazardous agents 50%-100% OEL. | Complaints - Receipt of multiple complaints on same topics from/ to **Local** NGO/ Govt. body (agencies/ organizations) | Complaints – Receipt of complaints /multiple complaints on same topics from/ to Local Union/ Govt. body | 1. Manage locally in accordance with local procedures | See Local Procedures |
| | | | Protest - Small scale demonstration ( including more than 5 and less than 20 people) with no work stoppage. | Protest Type - Small scale strike ( including more than 5 and less than 20 people) | 2. Report by email to the CEO, COO, Head of HSE & Sustainability / Legal Counsel | 24 Hours |
| | | | Petition given to District Administration related to issue/ complaint | - | 3. Report to SPM<br>4. Report to BU EXCO, BU Head, BU Corp Comm, CSR Head | 0 hours<br>Within 12 hours |
| | | | Issue raised in State Assembly/ National Parliament | - | 5. Report by email to the Sector Head, BU CEO, CEO, Head of HSE & Sustainability, Legal Counsel/concerned department and CSR Head | Within 12 hours |
| | | | Coverage - In Regional media- Newspaper / TV | Coverage – In Regional media- Newspaper / TV | 6. Statutory report to authorities (as required by local regulatory agencies) | Statutory Requirement |
| | | | | | 7. Report monthly in the Monthly Incident Report | Monthly |

| Incident Category | Definition | Severity Criteria | | For Safety Incidents | | For Environmental Incidents | |
|---|---|---|---|---|---|---|---|
| | | Safety | Environment | Actions | Timing | Escalation Matrix | Timing |
| Cat. 4 | Serious | Lost Time Injury / Illness | Incident very likely to cause short-term and/or long-term impacts on environment(or)<br>Likely to be of major concern to external stakeholders or attract state level media coverage(or)<br>Regulators likely to initiate show cause which may lead to fines or other sanctions due to Environment incident resulting in receipt of directions from regulatory authorities(or)<br>Remediation is required and likely to take more than 1 months and less than 3 months<br>Examples<br>• Breach of ash dyke/waste disposal site but no immediate impact to communities/ water bodies<br>• Unauthorized hazardous waste disposal on land (unlined) outside the plant boundary/unauthorized agencies.<br>• Continuous emissions beyond norms but no immediate impact on health of communities and no treatment required.<br>• Intermittent wastewater discharge outside plant (not meeting standards) | 1. Manage locally in accordance with local procedures and where applicable using the subsidiary Emergency Plan produced under TS13 Emergency and Crisis Management Technical Standard. | See Local Procedures | Business CEO, Location head, Head-Operations followed by Section Head/Area-In Charge/Shift In-Charge & Respective Environment In-Charge & Head-Environment & Head-HSE.<br>Head- HSE & Sustainability/Head-Environment | **Notification time**-Reporting within same shift in the system.<br>**Investigation Time Period**Investigation within 7 days |
| | | | | 2. Report one pager information by email to the HZL Company CEO, COO, Head HSES, Head Safety | Monthly | | |
| | | | | 3. Statutory report to authorities (as required by local regulatory agencies) | Statutory Requirement | | |
| | | | | 4. Investigate using site specific investigation guidelines | Investigation report within 28 days | | |
| | | | | 5. Report monthly in the Monthly Incident Report | Monthly | | |

| Incident Category | Definition | Severity Criteria | | | Actions | Timings |
|---|---|---|---|---|---|---|
| | | Health | Social / Legal | Labour | | |
| Cat. 4 | Serious | Adverse health effects that are permanent but don't significantly affect quality of life or longevity. Health effects that may be mildly limiting or disabling and could lead to change of occupation and life style, e.g. NIHL (Noise Induced Hearing Loss) / systemic lesions affecting reproductive system or having mutagenic potential / effects on musculoskeletal system / effects on central nervous system etc. Exposure to hazardous agents >100% OEL. | Complaints - Receipt of complaints / multiple complaints on same topics from/ to **National** NGO / **State** Govt. body | Complaints - Receipt of complaints / multiple complaints on same topics from / to National Union/ State Govt. body | 1. Manage locally in accordance with local procedures and where applicable using the subsidiary Emergency Plan produced under TS13 Emergency and Crisis Management Technical Standard. | See Local Procedures |
| | | | Protest from community in front of District Administration Office for CSR related matters | | Follow the action 1 along with:<br>2. Report to BU Corp Comm 3. Report to SPM, BU EXCO, BU Head. | 0 Hours |
| | | | Protest - Small scale demonstration ( including more than 5 and less than 20 people) **with work stoppage** | | Follow the action 1,2 ,3 along with:<br><br>4. Report by email to the ManCom, Head of HSE & Sustainability, Legal Counsel and CSR Head | 0 Hours<br><br>Within 12 Hours |
| | | | Protest - Large scale demonstration ( including more than 20 people) - No work stoppage | Protest Type - Large scale strike ( including more than 20 people) - No work stoppage | 5. Statutory report to authorities (as required by local regulatory agencies)<br><br>6. Investigate using the HZL defined methodology and tool | As per Statutory Requirement<br><br>Investigation report within 28 days |
| | | | Coverage - In National media- Newspaper / TV/ Internet | Coverage - In Regional media- Newspaper / TV/ Internet | 7. Report monthly in the Monthly Incident Report | Monthly |

| Incident Category | Definition | Severity Criteria | | For Safety Incidents | | For Environmental Incidents | |
|---|---|---|---|---|---|---|---|
| | | Safety | Environment | Actions | Timing | Escalation Matrix | Timing |
| Cat. 5 | Catastrophic | Single Fatality or Single permanently disabling injury | Incident certain to cause short term and long-term impacts on environment<br><br>(or)Regulators likely to initiate show cause and may result in possible suspension or closure of operations; or attract national media coverage.<br><br>(or)Remediation is required and likely to take more than 3 months<br><br>Examples<br>• Breach of ash dyke/waste disposal site affecting communities/ water bodies<br>• Contamination of drinking water bodies resulting in health concerns in communities and affecting drinking water supply to communities<br>• Emissions beyond norms and resulting in immediate health impact to stakeholders/ treatment is required.<br>• Regular wastewater disposal outside plant | For Reporting of Cat. 5 Safety Incident follow 'Fatality Communication Procedure' mentioned in Appendix-3. | | CEO, Head-Operations followed by Section Head/Area-In Charge/Shift In-Charge & Respective Environment In-Charge & HeadEnvironment & Head-HSE.<br><br>Head-HSE & Sustainability/Head-Environment | **Notification time**- Reporting within 4 hours shift in the system.<br><br>**Investigation Time Period**Investigation within 7 days |
| | | | | All Cat. 5 Safety Incidents to be investigated using ICAM (Incident Cause Analysis Method) described in Appendix-4. | Within 28 days | | |
| | | | | Manage locally in accordance with local procedures and where applicable using the subsidiary Emergency Plan produced under TS13 Emergency and Crisis Management Technical Standard. | See Local Procedures | | |
| | | | | Report immediately by verbal communication to the CEO, COO, Head HSE & Sustainability / Legal Counsel | 0 Hours | | |
| | | | | Report by email to the HZL Company CEO, COO, Head HSE & Sustainability / Legal Counsel | 12 Hours | | |
| | | | | Statutory report to authorities (as required by local regulatory agencies) | Statutory Requirement | | |
| | | | | Investigate using the HZL defined methodology and tool | Investigation report within 28 days | | |
| | | | | Report monthly in the Monthly Incident Report | Monthly | | |

| Incident Category | Definition | Severity Criteria | | | Actions | Timing |
|---|---|---|---|---|---|---|
| | | Health | Social / Legal | Labour | | |
| Cat. 5 | Catastrophic | Adverse health effects or continued exposure that is likely to lead to permanent physical or mental disability / longterm or permanent debilitating illness / significant reduction in quality of life / premature death; or diseases such as Silicosis / COPD (Chronic Obstructive Pulmonary Disease) / Cancer / HIV-AIDS etc.<br><br>Exposure to life-threatening hazardous agents >100% OEL. | Complaints - Receipt of complaints / multiple complaints on same topics from / to International NGO / Central Govt. body | Complaints - Receipt of complaints / multiple complaints on same topics from / to Central Govt. body | 1. Manage locally in accordance with local procedures and where applicable using the subsidiary Emergency Plan produced under TS13 Emergency and Crisis Management Technical Standard. | See Local Procedures |
| | | | | | 2. Report to BU Corp Comm<br>3. Report to SPM, BU ExCo, BU Head<br>4. Report immediately by verbal communication to the ManCom, Head HSE & Sustainability / Legal Counsel and CSR Head | 0 Hours |
| | | | | | 5.Report by email to the ManCom, COO, Head HSE & Sustainability / Legal Counsel, and CSR Head | 12 Hours |
| | | | Protest - Large scale demonstration ( including more than 20 people) - Stoppage of Work | Protest Type - Large scale strike ( including more than 20 people) - Stoppage of Work | Follow actions from 1-5, followed by:<br>6. Statutory report to authorities (as required by local regulatory agencies)<br>7. Investigate using the HZL defined methodology and tool | Statutory Requirement<br><br>Investigation report within 28 days |
| | | | Coverage - In International media- Newspaper / TV/ Internet | Coverage - In International media- Newspaper / TV/ Internet | 8. Report in the Monthly Incident Report | Monthly |
| Potential Cat. 5 | HIPO | | | | | |

| Incident Category | Definition | Severity Criteria | | For Safety Incidents | | For Environmental Incidents | |
|---|---|---|---|---|---|---|---|
| | | Safety | Environment | Actions | Timing | Escalation Matrix | Timing |
| Cat 5A | Catastrophic | Multiple Fatality & multiple permanently disabling injury | --- | For Reporting of Cat. 5A Safety Incident, follow 'Fatality Communication Procedure' mentioned in Appendix-3. | | --- | --- |
| | | | | All Cat. 5A Safety Incidents to be investigated using ICAM (Incident Cause Analysis Method) described in Appendix-4. | Within 28 days | --- | --- |
| 1) Potential Cat. 5 & 5A (Safety)<br>2) HIPO (Environment) | High Potential | Incident having a potential to cause impact equivalent to category 5 or 5A. | Incident having a potential to cause impact equivalent to category 4 or 5.<br>Examples:<br>• Breach of top raise of dyke/ waste disposal facility resulting in spillages in lower section but no spillages outside storage area.<br>• Failure of slope of waste disposal facility but no impact outside storage area.<br>• Malfunctioning of pollution control equipment, failure of controls which could have resulted in mis-happening of incident category- 4 or 5.<br>• Storage of tailing beyond the design parameters of tailing pond. | Report initial details of the incident to HSE Head & Safety Head | 72 hours | Immediate communication to Section Head/Area-In Charge/Shift In-Charge & Head- HSE & Sustainability /Head-Environment | Notification time-Reporting within same day in the system<br>Investigation Time<br>PeriodInvestigation within 7 days |
| | | | | Investigate Cat 5 HIPO using site specific investigation guidelines | 14 days | | |
| | | | | Investigate Cat 5a HIPO using ICAM (Incident Cause Analysis Method) described in Appendix-4. | 14 days | | |
| | | | | Corporate may choose a CrossFunctional Investigation Team for Critical Cat 5/5a HIPOs. | | | |
| | | | | Report one pager alert after investigation by email to the HSE Head, Safety Head & Incident Management Database System | 15 days | | |

# Appendix 3 – Fatality Communication Procedure

In case of a Fatality or Category 5 & 5a Safety incident (in accordance with Appendix 2) the following communication procedure should be adopted by all the sites and the responsible authority:

| S. No. | Responsibility | Timing | Means of Communication | Actions |
|---|---|---|---|---|
| 1. | Line In charge / Location supervisor / Department HOD / SBU Chief HSE officer | Immediate | Verbal | Inform to SBU Heads, BU Director, CEO, COO, HSE Head and Legal Counsel of respective BUs. |
| | | As soon as practicable | Mail | |
| 2. | SBU Heads / B U Director / BU CEO | Immediate | Verbal | Inform to CEO, HSE Head. |
| | | As soon as practicable | Mail | |
| 3 | CEO | After Receiving the Information | Mail | Inform to ExCO, Mancom. |
| 4. | HSE Head | After Receiving the Information | Mail | All BU CEO and BU HSE Heads giving initial details of the incident. |
| 5. | BU CEO / BU HSE Head | Within 24 hrs. | Mail | Send one pager detail to CEO, HSE Head giving details of preliminary analysis of incident. |
| 6. | HSE Head | When received | Mail | Send one pager detail received to ManCom, ExCO, all BUs CEO & HSE Heads. |
| 7. | Business CEO / HSE Head | Within 28 days* | Mail | Send detailed Investigation Report to CEO, HSE Head & Safety Head. |
| 8. | Safety Head | When received | Mail | Send a one pager Safety Alert to ManCom, ExCO, all BUs CEO, BU HSE Heads & BU Safety Heads mentioning incident details & recommendations to be implemented by all sites. |

*** In case the fatality is not concerned with an occupational / industrial accident and requires a statutory intervention the investigation report may get delayed as per the legal requirements.**

**Note: BU Director/ BU HSE Heads will ensure to inform the statutory authorities within timelines as per the statutory requirement.**

# Appendix 4 –ICAM for Fatality & Critical HIPO Investigation

**SCOPE:** To provide a systematic approach to undertake a Fatality (Cat.5 or 5A) or HIPO (Cat. 5A) Investigation using Incident Cause Analysis Method (ICAM) involving the following steps-

i. Immediate Action & Incident Reporting
ii. Site preservation & initial evidence collection
iii. Investigation team formation
iv. Investigation Planning before reaching the site
v. Data Collection- PEEPO Method
vi. Data Organization- Timeline Mapping
vii. Analyzing findings- ICAM Analysis
viii. Development of Recommendations & Key Learnings
ix. Investigation Report Formation
x. Implementation of Learnings

**INVESTIGATION PROCEDURE IN DETAIL:**

**1. Immediate Action & Incident Reporting:**

Following an incident, the job supervisor / shift in-charge / area in-charge / department head or any senior person present should immediately:

i. Initiate the Site Emergency Response plan as appropriate / required.
ii. Take action to make the area safe and prevent escalation of situation.
iii. Cease the operations or tasks directly related to the event.
iv. Provide necessary first aid or medical care to the injured.
v. Evacuate people, as necessary.
vi. Minimize environmental impact if any.
vii. Inform family of the injured person with appropriate care & sensitivity.

- Reporting of the incident should be done as per **Appendix-2 (Incident Classification & Reporting)** of this Standard.
- Any Fatality / Multiple Fatality Incident shall be notified to the concerned authority as per the **Fatality Communication Procedure** mentioned in Appendix-3.

**2. Site Preservation & Initial Evidence collection:**

After the initial rescue and evacuation process by Emergency Response team, it is necessary to keep the site undisturbed to avoid altering of the evidence. It is the responsibility of **Area In-charge** to keep the incident site preserved until the arrival of regulatory authority or incident investigation team. Also, the below mentioned initial evidence should be collected and kept ready by the **Site Safety Team** before the arrival of Investigation Team:

i. Pictures or videos of the incident scene.
ii. Drawings / maps / P&IDs of equipment or process involved.
iii. CCTV footages in the area if any. iv. Initial witness statements with identities.
v. Documentary evidence related to operating procedures (SOPs/SMPs), standards, permits etc.
vi. Evidence from clothes and belongings of the injured / deceased.
vii. Other physical evidence.

**3. Investigation Team Formation:**

The investigation team selection should be led by CEO and HSE Head and should include the following members:

i. Investigation Team Leader, preferably SBU Head Level (M3 and above), independent from Business where fatality has occurred.

ii. Subject Matter Expert (SME) from cross functional unit (1 or 2).

iii. One HSE representative.

iv. One Site liaison, who will assist the Investigation Team in gathering information & conducting interviews.

**It is necessary that at least one of the members in the team is trained in ICAM Lead Investigator Training.**

### 3.1 Objectives of Investigation:

The Investigation Team must be clear that the objective of the Investigation is to:

- Establish the facts.
- Identify contributing factors and latent hazards.
- Review adequacy of existing controls and procedures.
- Review related incidents / Safety Alerts / Safety Observations in past and actions taken.
- Report the findings.
- Recommend corrective actions which can improve efficiency, reduce risk, and prevent recurrence.
- Identify any key learning for distribution within the organization and externally as required.

**The Investigation Team should understand that the Incident Investigation is NOT meant for the purpose of allocating blames and liability.**

### 3.2 Role of Team Leader:

The Team Leader's role is to:

- Direct the investigation.
- Communicate and liaison with local management and HSE as required.
- Assign duties to the team.
- Obtain the services of specialist advisers as required.
- Schedule and co-ordinate investigation activities and resources.
- Supervise preparation of the investigation report.
- Brief management on the team's findings.

### 3.3 Role of Team Member:

The Team Member's role is to:

- Collect data, facts and evidence.
- Establish the sequence of events leading up to the occurrence.
- Analyze and integrate available information.
- Develop findings and conclusions.
- Determine the significance of findings.

- Write the investigation report.
- Present the report to management.

**4. Investigation Planning before reaching the site:**

Since it may take some time for the Investigation Team members to reach the incident site, it is important that the investigation team have a formal discussion on the incident prior to their visit to the incident location, to keep a plan ready to implement once they reach the site. This might be done on a virtual communication platform. The planning stage would normally commence with the following:

- Select a suitable secure virtual room as a platform to share information.
- Obtain copies of evidence collected by the Site Safety team / Site liaisons.
- Prepare tentative list of people to interviewed and communicate it to the local management prior to visit.
- Obtain maps, diagrams, and photographs that may be helpful to the investigation.
- Brainstorm the scope of the investigation.
- Outline a plan of action and allocate tasks.
- Identify any additional specialists required to assist in the investigation.
- Set up control and recording procedures for gathered evidence.
- Select a date to start preparing the incident report.
- Minute the meeting.
- Set the date, time, and place for the next meeting.

The team may ask for additional information or documents which they might need once they reach the site. The Site Liaisons should ensure all the required data is ready before all the members reach the site.

**5. Data Collection:**

Once all the investigation team members reach the preserved incident scene, the full-fledged investigation begins as per the plan in hand. The first step of this is Data Collection.

**5.1 Preliminary data collection:**

The preliminary information that the investigation team should collect from the incident location includes but is not limited to the below items:

- Positions of injured worker(s).
- Position & condition of equipment being used.
- Position of valves, switches, controls etc.
- Safety devices in use.
- Position of appropriate guards.
- Illumination, visibility, and noise levels at the site.
- State of housekeeping at the site.
- The effects of weather.
- Presence and location of witnesses.
- Presence of unauthorized personnel.
- Evidence of safety equipment failures.

- Evidence of loss of containment.
- Witness marks (gouges, scratches, smears, discoloration, burn marks etc.) if any.
- Presence or absence of warning signs or barriers.
- Results of other inspections by company representatives or external authorities.

### 5.2 Photography:

Photography is one of the most useful tools to the investigation team. Once the investigation team have left the scene, the photographs taken will be the only way for them to accurately recall exactly where something was.

Photographs taken at the accident scene should include the following:

- An overall view of the incident site taken from a minimum of four directions.
- Aerial views of the accident scene (equipment and weather permitting).
- Photos of objects struck by the equipment.
- Detailed photographs of suspected failed parts that contributed to the accident.
- Photos of failed personal protective clothing and equipment and the agents causing the failure or injuries.
- Photograph and measure skid marks, ground scars etc.
- Any other photographs deemed of interest to the investigation team.

Site team should take required permissions for taking photographs before the arrival of team.

### 5.3 Relevant data collection using PEEPO:

After preliminary data collection, further information gathering can be done under 5 main categories called as the PEEPO method:

**P –** People (The People involved)

**E –** Environment (The incident scene environment)

**E –** Equipment (The equipment involved)

**P –** Procedures (The relevant work procedures)

**O –** Organization (The organizational issues)

The data that must be gathered under these 5 categories has been briefed below.

**5.3.1 People:** Try to identify all the people who might have information about the incident and obtain testimonies from them. Interviewing is an essential technique for collected such information. The Investigation team should conduct interviews including the following individuals:

- Individuals directly involved in the incident.
- Supervisory personnel.
- Personnel at the scene.
- Management.
- Emergency Services personnel (if illness or injuries involved).
- Safety personnel.

- Subject matter experts.

Keep the interview short & simple and use language the person understands. Set a positive tone during the interview. Put the person at ease by conducting a friendly interview, not an interrogation.

**Some points to remember while conducting an interview:**

- Interview as soon as possible after the incident.
- Do not interrupt medical care to interview.
- Interview each person separately.
- People may be reluctant to discuss the incident, particularly if they think someone will get in trouble.
- Reassure them that this is a fact-finding process only.
- Remind them that these facts will be used to prevent a recurrence of the incident.
- Ask open-ended questions.
- Do not make suggestions.
- If the person is stumbling over a word or concept, do not help them out.
- Use closed-ended questions later to gain more detail.
- If the witness begins to offer reasons, excuses, or explanations, politely decline that knowledge, and remind them to stick with the facts.
- Ask the witness for recommendations to prevent recurrence; they will often have the best solutions to the problem.
- Get a written, signed testimony from the witness.
- It is best if the witness writes his or her own testimony. Interview notes signed by the witness may be used if the witness declines to write a testimony.

**5.3.2 Environment:** Examine the scene of the incident for information and to help understand the nature of the task being conducted and the local environmental conditions. Incident Investigators may gather information on:

- What were the weather conditions?
- Were any housekeeping issues involved?
- What were the workplace conditions?
- What surrounding noises were present?
- What were the light conditions?
- Were toxic or hazardous gases, dusts, or fumes present?
- Were the environmental risks communicated in anyway?

**5.3.3 Equipment:** Examine the equipment involved in the incident. Pay particular attention to the condition of equipment, anything that may have changed or be out of the ordinary e.g., abnormal stress, modifications, substitutions, distortions, fractures etc. Identify any design flaws, mismatched components or confusing labelling or marking. Ensure that the equipment was appropriate for the task being conducted. The investigation team may try to seek the following information:

- How did the equipment function?
- Were hazardous substances involved?
- Was any alternative equipment / material available?
- What was the condition of equipment / material?
- What personal protective equipment (PPE) was being used?

**5.3.4 Procedures:** Review the task that was being conducted. Examine the work procedures and the scheduling of the work to ascertain whether they contributed to the incident. Examine the availability, suitability, use and supervisory requirements of standard operating procedures or work instructions. Ensure the actual work procedure being used at the time of the incident is explored. The mode and efficiency of communication of the procedures should also be checked. The investigation team should look for answers to questions such as:

- What work procedure was used?
- Was a Job Safety Analysis conducted as part of planning prior to the task?
- Had conditions changed that would have affected the way normal procedures worked?
- How did the safety devices work?
- What lockout or isolation procedures were used?

**5.3.5 Organization:** Management holds the legal responsibility for the safety of the workplace and the workforce. The role of supervisors and management must always be considered in an incident investigation. Answers to any of the preceding types of questions logically lead to further questions such as:

- What applicable safety rules were communicated to employees? When?
- What written procedures were available?
- How were they enforced?
- What supervision was in place?
- What training was given in how to do the work? When? Is it still valid and current?
- How were hazards identified?
- What procedures had been developed to overcome them?
- How were unsafe conditions corrected?
- Was regular maintenance of equipment carried out?
- Were regular safety inspections carried out?
- Were there any changes to equipment, environment, people, or procedures?

## 5.4 Classification of gathered information:

Once the information is collected under the 5 Categories – People, Environment, Equipment, Procedure & Organization, the gathered information is placed in the form of a chart called as PEEPO Chart. It is NOT necessary that all the facts collected under PEEPO are contributing to the event, therefore, once the data is placed in PEEPO Chart it is necessary to color code the information as **'Contributing'** or **'Non-Contributing'** facts.

## 5.5 Releasing the Incident Scene:

Upon obtaining the information needed from the incident scene and once satisfied with the thoroughness of data gathering, the team should release the area to the responsible manager unless another investigation team (police, coroner, regulatory authority etc.) is conducting a concurrent investigation. The team leader should advise the manager of any hazardous condition and the removal of any equipment from the scene.

## 6 Data Organization - Timeline Mapping:

After examining all the evidence, conducting interviews, and collecting information, it is necessary to arrange the events in chronological order or in a logical and sequential path. There are several data organizing techniques such as Timelines, Event and Condition Charts, Time Ordered Event Charts, and Incident Trees that are available to assist in understanding the incident. The timeline should have sufficient information that a person who is not part of the investigation team can read the timeline and have a clear understanding of how the incident progressed.

The process for developing the Timeline is outlined below in Fig. 1. Follow numbers on order from 1 to 5.

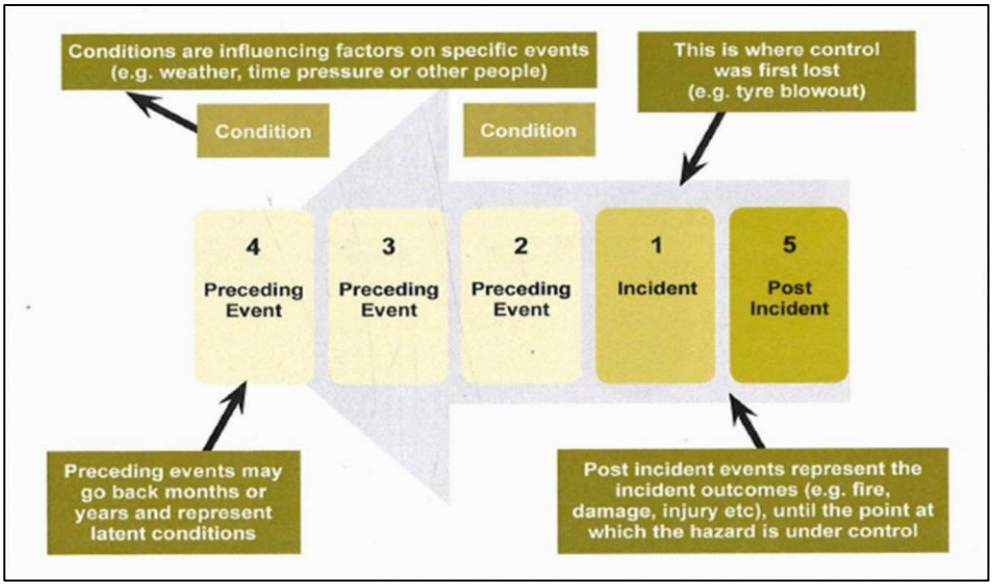


**Figure 1: Timeline Process**

## 7 Analyze Findings – ICAM Analysis:

The data gathered and organized should be analyzed using Incident Cause Analysis Method (ICAM) to identify the underlying causes of the incident, which are systemic in nature. This technique is designed to ensure that the investigation is not restricted to the errors and violations of people instead it identifies the workplace factors that contributed to the incident and the organizational deficiencies within the system that act as forerunners to an incident. An adaptation of the Reason 'Swiss Cheese Model' depicting ICAM terminology appears in Figure 2 below:

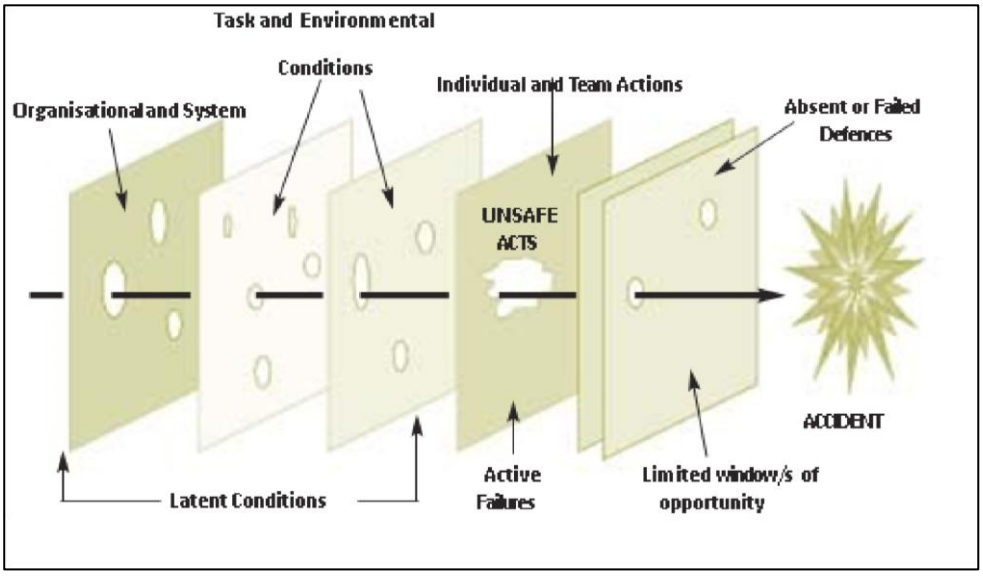


**Figure 2: Reason's Swiss Cheese Model**

As per Reason's theory, for an organizational incident, failures in the three basic elements are required:

- Organizational processes.
- Task and environmental conditions.
- Individual or Team Action.

These failures combined with a limited window of opportunity where the **system defences that normally control the hazard are absent or failed** results in the adverse outcome i.e. an accident, incident, near miss or operational failure.

### 7.1 Building the ICAM Chart:

To perform the ICAM Analysis all the 'Contributing Factors' marked in the PEEPO Chart are transported under the below 4 categories:

- Absent / failed defences
- Individual / Team Actions
- Task / Environmental Conditions
- Organizational Factors

The above 4 categories act as layers of defences to prevent a hazard to result into an incident. The gaps in these layers of defences results in the hazard turning into reality and causing the incident. While transporting the Contributing Factors under these 4 categories there is a **Check Question** that should be asked to ensure that the contributing factor has been correctly classified. More details regarding this have been mentioned below.

#### 7.1.1 Identify the Absent or Failed Defenses:

These are basically the failure in Controls / Barriers that generally prevent that incident. Defenses are equipment or procedures for detection, warning, recovery, containment, escape and evacuation, as well as individual awareness and protective equipment. These contributing factors result from inadequate or absent defenses that failed to detect and protect the system against technical and human failures. These are the control measures which did not prevent the incident or limit its consequences.

***Check question:*** Does this contributing factor describe the equipment, work process, control measure, detection system, procedure or attribute which normally prevents this incident or limits

#### 7.1.2 Identify the Individual/Team Actions:

These are the errors or violations that led directly to the incident. They are typically associated with personnel having direct contact with the equipment, such as operators or maintenance personnel.

***Check question:*** Does this contributing factor tell you about an **error or violation** of a standard or procedure made in the presence of a hazard?

**Human error types:**

The Individual / Team Actions can an intended action or unintended action. be further classified into following types of Human Error:

- ***Slips –*** errors in which the right intention or plan is incorrectly carried out. These usually occur during wellpracticed and familiar tasks in which actions are largely automatic.
- ***Lapses –*** failures to carry out an action. Lapses typically involve failures of memory.

- ***Mistakes –*** involve deficiencies or failures in the judgement process. These occur when rules are applied incorrectly or knowledge relevant to the situation is inadequate, and a flawed plan is developed. When carried out, the plan will not lead to the desired outcome.
- ***Violations –*** deliberate deviations from safe operating practices, procedures, standards or rules. These can be further categorized as:
- Routine (the breach of rules or corner cutting has become implicitly accepted, and a normal activity)
- Exceptional (one-off violation enacted in unusual circumstances)
- Acts of sabotage (deliberate action intended to cause damage).

Figure 3 below shows the various categories used to classify human error, which are initially separated into intended or unintended actions.

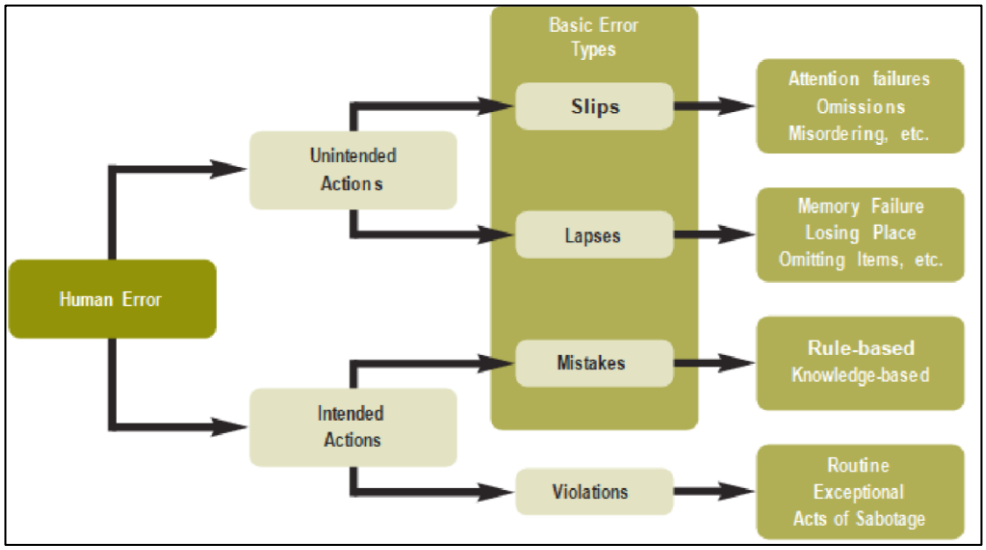


**Figure 3**Classification of Human Error

### 7.1.3 Identify the Task/Environmental Conditions:

These are the conditions in existence immediately prior or at the time of the incident that directly influences human and equipment performance in the workplace. These are the circumstances under which the errors and violations took place and can be embedded in task demands, the work environment, individual capabilities, and human factors.

Deficiencies in these conditions can promote the occurrence of errors and violations. They may also stem from an Organizational Factor Type such as Risk Management, Training, Incompatible Goals, or Organization, when the system tolerates their long-term existence.

***Check question:*** Does this contributing factor describe something about the task demands, work environment, individual capabilities or human factors that promoted errors/violations or undermined the effectiveness of the system's defenses?

### 7.1.4 Identify the Organizational Factor Types:

These are the underlying organizational factors that produce the conditions that affect performance in the workplace. They may lie dormant or undetected for a long time within an organization and only become apparent when they combine with other contributing factors that led to the incident. These may include management decisions, processes, practices, risk management within the organization, Maintenance Management, Management of Change, Contractor Management etc.

***Check question:*** Does this contributing factor identify a standard Organizational Factor present before the incident and which:

- produced adverse task/environmental conditions, or allowed them to go unaddressed,
- promoted or passively tolerated errors or violations,
- Undermined or removed the system defenses?

## 8 Development of Recommendations & Key Learnings:

The investigation should identify recommendations for corrective actions to prevent recurrence, reduce risk and advance safety. This can best be achieved by addressing all **Absent or Failed defenses** and **Organizational Factors** identified by the ICAM analysis. The task / environment conditions and the individual / team action can be used to develop some **local learnings** by the Business Unit but developing recommendations around them is **NOT** within the scope of the Investigation Team.

The corrective actions recommended by the investigation team should be specific, measurable, accountable, reasonable & effective. Each recommendation is a written statement of the action management should take to correct a contributing factor.

Recommendations should be based upon the Hierarchy of Controls.

The hazard controls in the hierarchy are, in order of decreasing effectiveness:

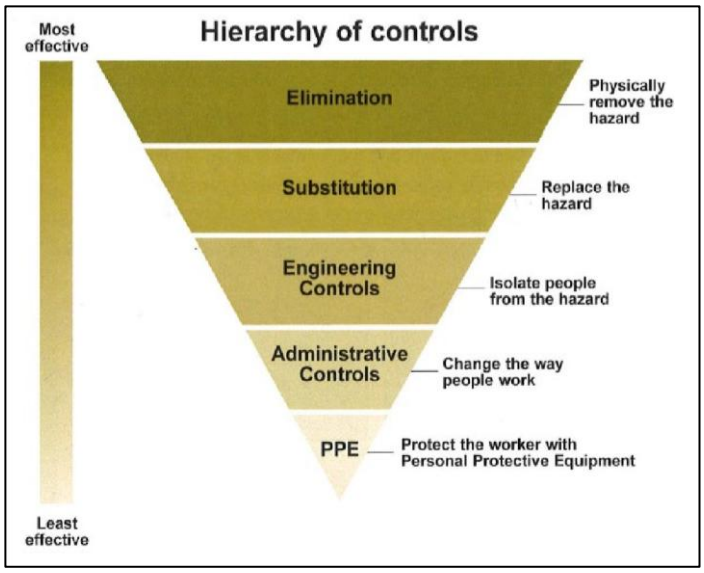


**Figure 4:** Hierarchy of Control

**Key Learnings:**

After developing the recommendations, the final step is to develop **2 or 3 Key Learnings** from the event to share around the organization. These are not a rehash of the recommendations but high-level takeaways from the event that can be horizontally deployed in other Businesses.

## 9 Investigation Report Formation:

The investigation report is the formal presentation of the investigation team's findings and recommendations.

Inclusion of the ICAM chart will assist management in understanding the factors contributing to the incident. As a minimum the report should include:

i. Incident Summary

ii. Timeline Chart

iii. PEEPO Chart

iv. ICAM Analysis

v. Conclusion & Observations

vi. Recommendations

vii. Key Learnings

viii. Report Sign-off

ix. Appendix-

- Supporting Pictures
- Supporting Evidence

After developing the Investigation Report, the Investigation team should discuss the findings and recommendations with the Management of the Business Unit and notify them in case any immediate action needs to be taken. They should also inform the Management if they discover any additional findings that might not be relevant to the incident but may possess a serious hazard for the organization. After the management review, the Investigation Report should then be submitted to the CEO and HSE Head for their review and approval. The Investigation Report should be submitted to the HSE Head within 28 days of the incidence occurrence, unless there is an unavoidable delay due to legal or regulatory processes.

## 10 Implementation of Learnings:

Once the Investigation Report is approved by the HSE Head, the Safety Head will circulate the one pager Safety Alert to all HSE Heads mentioning the Learnings that should be horizontally deployed across all Businesses. It is the responsibility of BU HSE Head to circulate the Safety Alert, when received, within their unit to the respective department heads / area in-charges who will further communicate the same to operation and maintenance personnel in daily Toolbox Talks (TBTs). Once the Business Units receives the Safety Alert, each unit must develop and implement a system to address all the recommendations. The actions that need immediate focus must be completed within the target date and reported to Safety Team. For long-term system-related recommendations the BUs should provide periodic status reports to the Safety Team. The respective BUs should also include the verification of the implementation for the recommendations that they claim to have implemented supported by appropriate pictures, videos, documents or sign-off from the concerned area Incharge. The Safety Alert compliance report will be tracked monthly by Safety Team and actual site auditing of all the implemented recommendations will be a part of VSAP Audit.

# Appendix 5 –

## FLOW CHART OF REPORTING, INVESTIGATION & COMMUNICATION FOR ENVIRONMENTAL INCIDENTS