**INCIDENT INVESTIGATION REPORT TEMPLATE**

< Mention Title of Incident Here >

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1. **CONSTITUTION OF INCIDENT INVESTIGATION COMMITTEE**

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| Ref. Section 1.3 of Incident Investigation Procedure. |

1. **SUMMARY OF INCIDENT**

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| * **DATE, TIME, AND SPECIFIC LOCATION OF INCIDENT** * **NAMES, JOB TITLES, AND EMPLOYEES / CONTRACTORS INVOLVED AND IMMEDIATE SUPERVISOR(S)** * **NAMES AND STATEMENTS OF WITNESSES** * **EVENTS LEADING UP TO INCIDENT** * **EXACTLY WHAT EMPLOYEE / CONTRACTOR WAS DOING AT THE MOMENT OF THE ACCIDENT** * **ENVIRONMENTAL CONDITIONS** * **CIRCUMSTANCES (INCLUDING TASKS, EQUIPMENT, TOOLS, MATERIALS, PPE, ETC.)** * **SPECIFIC INJURIES (INCLUDING PART(S) OF BODY INJURED AND NATURE AND EXTENT OF INJURIES)** * **TYPE OF TREATMENT FOR INJURIES** * **DAMAGE TO ENVIRONMENT, EQUIPMENT, MATERIALS, ETC.** * **FLOWCHARTS / SKETCHES / PICTURES** |

1. **FAILED / MISSING BARRIER(S)**

** SWISS CHEESE DIAGRAM  BOWTIE DIAGRAM**

**For any incident to occur, multiple barriers may have weakened or failed. Investigation team should determine why the barriers weakened or failed by assessing following Comprehensive List of Causes (CLCs):**

**PROBABLE ACTIVE FAILURES (PRIMARY SURFACE CAUSES)**

**PROBABLE PRECONDITIONS (CONTRIBUTORY CAUSES)**

**LATENT FAILURES (DESIGN ROOT CAUSES)**

**SELECT MOST PROBABLE ACTIVE FAILURES (PRIMARY SURFACE CAUSES)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Actions** | | | | | | | |
| **1.0 Following Procedures** | | **2.0 Use of Tools or Equipment** | | **3.0 Use of Protective Methods** | | **4.0 Inattention / Lack of Awareness** | |
|  | Violation by individual |  | Improper use of equipment |  | Lack of knowledge of hazards present |  | Improper decision making or lack of judgment |
|  | Violation by group |  | Improper use of tools |  | Personal protective equipment not used |  | Distracted by other concerns |
|  | Violation by supervisor |  | Use of defective equipment  (aware) |  | Improper use of proper personal protective equipment |  | Inattention to footing and surroundings |
|  | Operation of equipment without authority |  | Use of defective tools  (aware) |  | Servicing of energized equipment |  | Horseplay |
|  | Improper position or posture for the task |  | Improper placement of tools,  equipment or materials |  | Equipment of materials not secured |  | Acts of violence |
|  | Overexertion of physical capability |  | Operation of equipment at  improper speed |  | Disabled guards, warning systems or safety devices |  | Failure to warn |
|  | Work or motion at improper speed |  | Servicing of equipment in operation |  | Removal of guards, warning systems or safety devices |  | Use of drugs or alcohol |
|  | Improper lifting |  | Other |  | Personal protective equipment not available |  | Routine activity without thought |
|  | Improper loading |  |  |  | Other |  | Other |
|  | Shortcuts |  |  |  |  |  |  |
|  | Other |  |  |  |  |  |  |
| **Conditions** | | | | | | | |
| **5.0 Protective System** | | **6.0 Tools, Equipment and Vehicles** | | **7.0 Work Exposure To** | | **8.0 Workplace Environment / Layout** | |
|  | Inadequate guards or protective devices |  | Defective equipment |  | Fire or explosion |  | Congestion or restricted motion |
|  | Defective guards or proactive devices |  | Inadequate equipment |  | Noise |  | Inadequate or excessive illumination |
|  | Inadequate personal protective equipment |  | Improperly prepared equipment |  | Energized electrical systems |  | Inadequate ventilation |
|  | Defective personal protective equipment |  | Defective tools |  | Energized systems, other than electrical |  | Unprotected height |
|  | Inadequate warning systems |  | Inadequate tools |  | Radiation |  | Workplace layout  controls |
|  | Defective warning systems |  | Improperly prepared tools |  | Temperature extremes | - | *displays less than adequate* |
|  | Inadequate isolation of process or equipment |  | Defective vehicle |  | Hazardous chemicals | - | *labels less than adequate* |
|  | Inadequate safety devices |  | Inadequate vehicle for the purpose |  | Mechanical hazards | - | *locations out of reach or sight* |
|  | Defective safety devices |  | Improperly prepared vehicle |  | Clutter or debris | - | *conflicting information presented* |
|  | Other | 6.10 | Other |  | Storms or acts of nature |  | Other |
|  |  |  |  |  | Slippery floors or walkways |  |  |
|  |  |  |  |  | Other |  |  |

**SELECT MOST PROBABLE PRECONDITIONS (CONTRIBUTORY CAUSES)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Personal Factors** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **9.0 Physical Capability** | | | | **10.0 Physical Condition** | | | | | **11.0 Mental State** | | | | | **12.0 Mental Stress** | | | | | **13.0 Behavior** | | | | | | **14.0 Skills** | | | |
|  | | Vision deficiency | |  | Previous injury or  illness | | | |  | Poor judgment | | | |  | | Preoccupied with  problems | | |  | | Improper performance is  rewarded | | | |  | Inadequate assessment  of required skills | | |
|  | | Hearing deficiency | |  | Fatigue | | | |  | Memory failure | | | |  | | Frustration | | | - | | *saves time or effort* | | | |  | Inadequate practice of  skill | | |
|  | | Other sensory deficiency | | - | *due to workload* | | | |  | Poor coordination or reaction time | | | |  | | Confusing  directions/demands | | | - | | *avoids discomfort* | | | |  | Infrequent performance  of skill | | |
|  | | Reduced respiratory  capacity | | - | *due to lack of rest* | | | |  | Emotional disturbance | | | |  | | Conflicting  Directions  demands | | | - | | *gains attention* | | | |  | Lack of coaching on  skill | | |
|  | | Other permanent  physical disabilities | | - | *due to sensory*  *overload* | | | |  | Fears or phobias | | | |  | | Meaningless or  degrading activities | | |  | | Improper supervision | | | |  | Insufficient review of  instruction to establish  skill | | |
|  | | Temporary disabilities | |  | Diminished performance | | | |  | Low mechanical  aptitude | | | |  | | Emotional overload | | |  | | Inadequate identification  of critical safe  behaviors | | | |  | Other | | |
|  | | Inability to sustain body  positions | | - | *due to temperature*  *extremes* | | | |  | Low learning aptitude | | | |  | | Extreme judgment  decisions/demands | | |  | | Inadequate  reinforcement of critical  safe behaviors | | | |  |  | | |
|  | | Restricted range of body  movement | | - | *due to oxygen*  *deficiency* | | | |  | Influenced by  medication | | | |  | | Extreme concentration/  perception demands | | | - | | *proper performance is*  *criticized* | | | |  |  | | |
|  | | Inadequate size or strength | | - | *due to atmospheric pressure variation* | | | |  | Other | | | |  | | Extreme boredom | | | - | | *Inappropriate peer*  *pressure* | | | |  |  | | |
|  | | Substance sensitivities  or allergies | |  | Blood sugar  insufficiency | | | |  |  | | | |  | | Other | | | - | | *inadequate*  *performance feedback* | | | |  |  | | |
|  | | Diminished capacity due  to medication | |  | Impairment due to use of drug  or alcohol | | | |  |  | | | |  | |  | | | - | | *inadequate disciplinary*  *process* | | | |  |  | | |
|  | | Other | |  | Other | | | |  |  | | | |  | |  | | |  | | *Inappropriate*  *aggression* | | | |  |  | | |
|  | |  | |  |  | | | |  |  | | | |  | |  | | |  | | Improper use of  production incentives | | | |  |  | | |
|  | |  | |  |  | | | |  |  | | | |  | |  | | |  | | Supervisor implied  haste | | | |  |  | | |
|  | |  | |  |  | | | |  |  | | | |  | |  | | |  | | Employee perceived  haste | | | |  |  | | |
|  | |  | |  |  | | | |  |  | | | |  | |  | | |  | | Other | | | |  |  | | |
| **Job Factors** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **15.0 Training / Knowledge Transfer** | | | | | | **16.0 Management / Supervision Employee Leadership** | | | | | | **17.0 Contractor Selection**  **and Oversight** | | | | | | **18.0 Engineering / Design** | | | | | | **19.0 Work Planning** | | | |
|  | | | Inadequate knowledge  transfer | | |  | | Conflicting roles/  responsibilities | | | |  | Lack of contractor pre-qualifications | | | | |  | Inadequate technical  design | | | | |  | Inadequate work  planning | | |
| - | | | *inability to*  *comprehend* | | | - | | *unclear reporting*  *relationships* | | | |  | Inadequate contractor pre-qualifications | | | | | - | *design input obsolete* | | | | |  | Inadequate preventive  maintenance | | |
| - | | | *inadequate instruction*  *Qualifications* | | | - | | *conflicting reporting*  *relationships* | | | |  | Inadequate contractor selection | | | | | - | *design input not correct* | | | | | - | assessment of needs | | |
| - | | | *inadequate training*  *equipment* | | | - | | *unclear assignment of*  *responsibility* | | | |  | Use of non-approved  contractor | | | | | - | *design input not*  *available* | | | | | - | lubrication/ servicing | | |
| - | | | *misunderstood*  *instructions* | | | - | | *conflicting assignment of responsibility* | | | |  | Lack of job oversight | | | | | - | *design output*  *inadequate* | | | | | - | adjustment/ assembly | | |
|  | | | Inadequate recall of  training material | | | - | | *improper or*  *insufficient delegation*  *of authority* | | | |  | Inadequate oversight | | | | | - | *design input feasible* | | | | | - | clearing/ resurfacing | | |
| - | | | *training not reinforced*  *on the job* | | |  | | Inadequate leadership | | | |  | Other | | | | | - | *design output unclear* | | | | |  | Inadequate repair | | |
| - | | | *inadequate refresher*  *training frequency* | | | - | | *standards of*  *performance missing or not enforced* | | | |  |  | | | | | - | *design output not*  *correct* | | | | | - | *communication of*  *needed repair* | | |
|  | | | Inadequate training  effort | | | - | | *inadequate*  *accountability* | | | |  |  | | | | | - | *design output inconsistent* | | | | | - | *scheduling of work* | | |
| - | | | *inadequate training*  *program design* | | | - | | *inadequate or incorrect*  *performance feedback* | | | |  |  | | | | | - | *no independent design*  *Review* | | | | | - | *examination of parts* | | |
| - | | | *inadequate training*  *goals/ objectives* | | | - | | *inadequate work site*  *walk-through* | | | |  |  | | | | |  | Inadequate standards,  specifications, and/or  design criteria | | | | | - | *parts substitution* | | |
| - | | | *inadequate new*  *employee orientation* | | | - | | *inadequate safety*  *Promotion* | | | |  |  | | | | |  | Inadequate assessment  of potential failure | | | | |  | Excessive wear and tear | | |
| - | | | *inadequate initial*  *training* | | |  | | Inadequate correction of prior hazard / incident | | | |  |  | | | | |  | Inadequate ergonomic design | | | | | - | *inadequate planning*  *for use* | | |
| - | | | *inadequate means to*  *determine if qualified for job* | | |  | | Inadequate identification  of worksite/ job hazards | | | |  |  | | | | |  | Inadequate monitoring  of construction | | | | | - | *extension of service*  *life* | | |
|  | | | No training provided | | |  | | Inadequate management  of change system | | | |  |  | | | | |  | Inadequate assessment  of operational readiness | | | | | - | *improper loading* | | |
| - | | | *need for training not*  *Identified* | | |  | | Inadequate incident  reporting/ investigation  system | | | |  |  | | | | |  | Inadequate monitoring  of initial operation | | | | | - | *use by untrained*  *people* | | |
| - | | | *training records*  *incorrect or out of date* | | |  | | Inadequate or lack of  safety meetings | | | |  |  | | | | |  | Inadequate evaluation  and/or documentation of  change | | | | | - | *use for wrong purpose* | | |
| - | | | *new work methods*  *introduced without*  *training* | | |  | | Inadequate performance  measurement and  assessment | | | |  |  | | | | |  | Other | | | | |  | Inadequate reference  materials or publications | | |
| - | | | *decision made not to*  *Train* | | |  | | Other | | | |  |  | | | | |  |  | | | | |  | Inadequate audit/  inspection/ monitoring | | |
|  | | | Other | | |  | |  | | | |  |  | | | | |  |  | | | | | - | *no documentation* | | |
|  | | |  | | |  | |  | | | |  |  | | | | |  |  | | | | | - | *no correction*  *responsibility assigned* | | |
|  | | |  | | |  | |  | | | |  |  | | | | |  |  | | | | | - | *no accountability for*  *corrective action* | | |
|  | | |  | | |  | |  | | | |  |  | | | | |  |  | | | | |  | Inadequate job  placement | | |
|  | | |  | | |  | |  | | | |  |  | | | | |  |  | | | | | - | *appropriate personnel*  *not identified* | | |
|  | | |  | | |  | |  | | | |  |  | | | | |  |  | | | | | - | *appropriate personnel*  *not available* | | |
|  | | |  | | |  | |  | | | |  |  | | | | |  |  | | | | | - | *appropriate personnel*  *not provided* | | |
|  | | |  | | |  | |  | | | |  |  | | | | |  |  | | | | |  | Other | | |
| **Job Factors** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **20.0 Purchasing, Material**  **Handling and Material Control** | | | | | **21.0 Tools and Equipment** | | | | | | | **22.0 Work Rules (Policies, Standards & Procedures – PSP)** | | | | | | | **23.0 Communication** | | | | | | | |
|  | | Incorrect Items Received | | |  | | Inadequate assessment of needs and risks | | | | |  | | Lack of PSP for the task | | | | |  | | Inadequate horizontal communication between peers | | | | | |
| - | | *inadequate*  *specifications to vendor* | | |  | | Inadequate human factors / ergonomics considerations | | | | | - | | *lack of defined responsibility for PSP* | | | | |  | | Inadequate vertical communication between supervisor and person | | | | | |
| - | | *inadequate specifications on requisition* | | |  | | Inadequate standards or  specifications | | | | | - | | *lack of job safety*  *Analysis* | | | | |  | | Inadequate communication between different organizations | | | | | |
| - | | *inadequate control on changes to orders* | | |  | | Inadequate availability | | | | | - | | *inadequate job safety analysis* | | | | |  | | Inadequate communication between work groups | | | | | |
| - | | *unauthorized Substitution* | | |  | | Inadequate adjustment / repair / maintenance | | | | |  | | Inadequate development of PSP | | | | |  | | Inadequate communication between shifts | | | | | |
| - | | *inadequate product*  *Acceptance requirements* | | |  | | Inadequate salvage and reclamation | | | | | - | | *inadequate coordination with process / equipment design* | | | | |  | | Inadequate communication methods | | | | | |
| - | | *no acceptance verification performed* | | |  | | Inadequate removal / replacement of unsuitable items | | | | | - | | *inadequate employee involvement in the development* | | | | |  | | No communication method available | | | | | |
|  | | Inadequate research on materials / equipment | | |  | | No equipment record history | | | | | - | | *inadequate definition of correction actions* | | | | |  | | Incorrect instructions | | | | | |
|  | | Inadequate mode or route of shipment | | |  | | Inadequate equipment record history | | | | | - | | *inadequate format for easy use* | | | | |  | | Inadequate communication due to job turnover | | | | | |
|  | | Improper handling of materials | | |  | | Other | | | | |  | | Inadequate implementation of PSP, due to deficiencies | | | | |  | | Inadequate communication of safety and health data, regulations or guidelines | | | | | |
|  | | Improper storage of materials or spare parts | | |  | |  | | | | | - | | *contradictory requirements* | | | | |  | | Standard terminology not used | | | | | |
|  | | Inadequate material  packaging | | |  | |  | | | | | - | | *confusing format* | | | | |  | | Verification / repeat back techniques not used | | | | | |
|  | | Material shelf life exceeded | | |  | |  | | | | | - | | *more than one action per step* | | | | |  | | Messages too long | | | | | |
|  | | Improper identification  of hazardous materials | | |  | |  | | | | | - | | *no check-off spaces provided* | | | | |  | | Speech interference | | | | | |
|  | | Improper salvage and/or waste disposal | | |  | |  | | | | | - | | *inaccurate sequence of steps* | | | | |  | | Other | | | | | |
|  | | Inadequate use of safety and health data | | |  | |  | | | | | - | | *confusing instructions* | | | | |  | |  | | | | | |
|  | | Other | | |  | |  | | | | | - | | *technical error / missing steps* | | | | |  | |  | | | | | |
|  | |  | | |  | |  | | | | | - | | *excessive references* | | | | |  | |  | | | | | |
|  | |  | | |  | |  | | | | | - | | *potential situations not covered* | | | | |  | |  | | | | | |
|  | |  | | |  | |  | | | | |  | | Inadequate enforcement  of PSP | | | | |  | |  | | | | | |
|  | |  | | |  | |  | | | | | - | | *inadequate monitoring*  *of work* | | | | |  | |  | | | | | |
|  | |  | | |  | |  | | | | | - | | *inadequate supervisory*  *knowledge* | | | | |  | |  | | | | | |
|  | |  | | |  | |  | | | | | - | | *inadequate*  *reinforcement* | | | | |  | |  | | | | | |
|  | |  | | |  | |  | | | | | - | | *non-compliant not*  *corrected* | | | | |  | |  | | | | | |
|  | |  | | |  | |  | | | | |  | | Inadequate  communication of PSP | | | | |  | |  | | | | | |
|  | |  | | |  | |  | | | | | - | | *incomplete distribution*  *to work groups* | | | | |  | |  | | | | | |
|  | |  | | |  | |  | | | | | - | | *inadequate translation*  *to appropriate*  *languages* | | | | |  | |  | | | | | |
|  | |  | | |  | |  | | | | | - | | *incomplete integration*  *with training* | | | | |  | |  | | | | | |
|  | |  | | |  | |  | | | | | - | | *out of date revisions*  *still in use* | | | | |  | |  | | | | | |
|  | |  | | |  | |  | | | | |  | | Other | | | | |  | |  | | | | | |

**ANALYSIS OF LATENT FAILURES (DESIGN ROOT CAUSES)**

* **Latent Failures are HSE Management System failures which led to the pre-conditions of the incident. They are also mentioned as Design Root Causes and often ascribed to Elements of Management Systems or Elements of Performance Standards.**
* **Latent Failures (Design Root Causes) are linked with Preconditions (Contributory Causes) using a distinct color scheme.**
* **Investigation Committee shall identify and elaborate the pertinent gaps or deviations as design root causes.**

|  |  |  |
| --- | --- | --- |
| **#** | **HSE System Element** | **Detail of Gap / Deviation** |
|  | **Leadership, Commitment & Accountability** |  |
|  | **Risk Assessment and Management** |  |
|  | **Training, Competence and Fitness** |  |
|  | **Documented Information and Communication** |  |
|  | **Design, Engineering and Construction** |  |
|  | **Operations & Maintenance** |  |
|  | **Contractors Management** |  |
|  | **Management of Change** |  |
|  | **Crisis & Emergency Preparedness and Planning** |  |
|  | **Incident Investigation and Analysis** |  |
|  | **Performance Measurement, Audit, Management Reviews and Improvement** |  |

1. **FINDINGS**

Assessment of all failed & missing barriers i.e. active failures (primary surface causes), preconditions (contributory causes) and latent failures (design root causes) shall be correlated and a comprehensive root cause analysis shall be summarized as findings.

1. **RECOMMENDATIONS**

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| Immediate corrective measures as well as long-term corrective & preventive actions shall be jot down along with timeframe. |

1. **ANNEXURES**