5.4.8.2 SM-Concerned, after review shall mention the necessary corrective action plan and forward the "Form-C" to the Mgr-F&S.

5.4.8.3 Mgr-F&S along with the concerned Mgr/SM shall carryout the detailed investigation of accident and prepare accident investigation report in pre-structured "Form-D" and forward the same to the following officials;

(a) VP-O
(b) GM-TS&P
(c) GM-concerned
(d) DGM-HR&A

5.4.8.4 Manager (F&S) shall also prepare a synopsis from this report along with remedial measures / action taken and circulate it to all departments for information of employees.

5.4.8.5 In case of fatal or serious accident over and above the routine investigation as defined in 5.3 if required by Unit Head further investigations shall be carried out by a committee separately formed by Unit Head.

5.4.9 ANALYSIS OF ACCIDENTS:

Mgr-F&S shall carry out the statistical analysis of accidents and submit the report to management on Monthly and Yearly basis.

Statistical Analysis shall be carried out for following indices:

$$\text{Incident Rate} = \frac{\text{No. of Loss Time Injury x 1000}}{\text{Average number of persons employed}}$$

$$\text{Frequency Rate} = \frac{\text{No. of loss time injury x } 10^6}{\text{Total manhours worked}}$$

$$\text{Severity Rate} = \frac{\text{No. of mandays lost x } 10^6}{\text{Total manhours worked}}$$

$$\text{Safety Index} = \frac{\text{Total manhours due to loss time injury}}{\text{Total million manhours worked}}$$

6 CLOSURE & COST ANALYSIS OF ACCIDENT

6.1 Accident closure shall be initiated by Medical Officer through Form-E.

6.2 At the time of issuing fitness certificate, Medical Officer shall also fill cost incurred on the *treatment including cost of providing Ambulance and additional nursing assistance. if* any.

6.3 Medical Officer shall forward the form to concerned SM / Mgr who shall complete the balance entries on the form and send it to Mgr. (F&S) through HOD.

6.4 Based on the information provided on Form-E, Mgr.(F&S) shall complete the accident closure and statistical reports.

6.5 Based on the above information Mgr (F&S) or his representatives shall carry out cost analysis of accidents and circulate the report to Management

7 APPLICABLE ACTS / RULES CHECK CHART

S. No	Act / Rules	Details of accident	Respon -sibility	Action	Agencies to be informed
1	Factories Act - Sec 88, 88A and Rajasthan Factories Rules 101	**Accident** a. Occurrence of accident resulting in death of which results in such bodily injury to any person as is likely to cause his death.	Factory Manager	▪ Immediately inform by telephone/ special messenger or telegram ▪ To be confirmed within 12 hrs. of accident in form-20.	Dy.CIF&B, CIF&B, DM or SDM, Nearest police station, Relatives of injured/deceased person.
		b. Which prevents the person injured from working for a period of 48 hrs. or more of the accident.	Factory Manager	Inform within 24 hrs. after the expiry of 48 hrs. from the time of accident or dangerous occurrence	DY.CIF&B Kota

8 DOCUMENTATION:

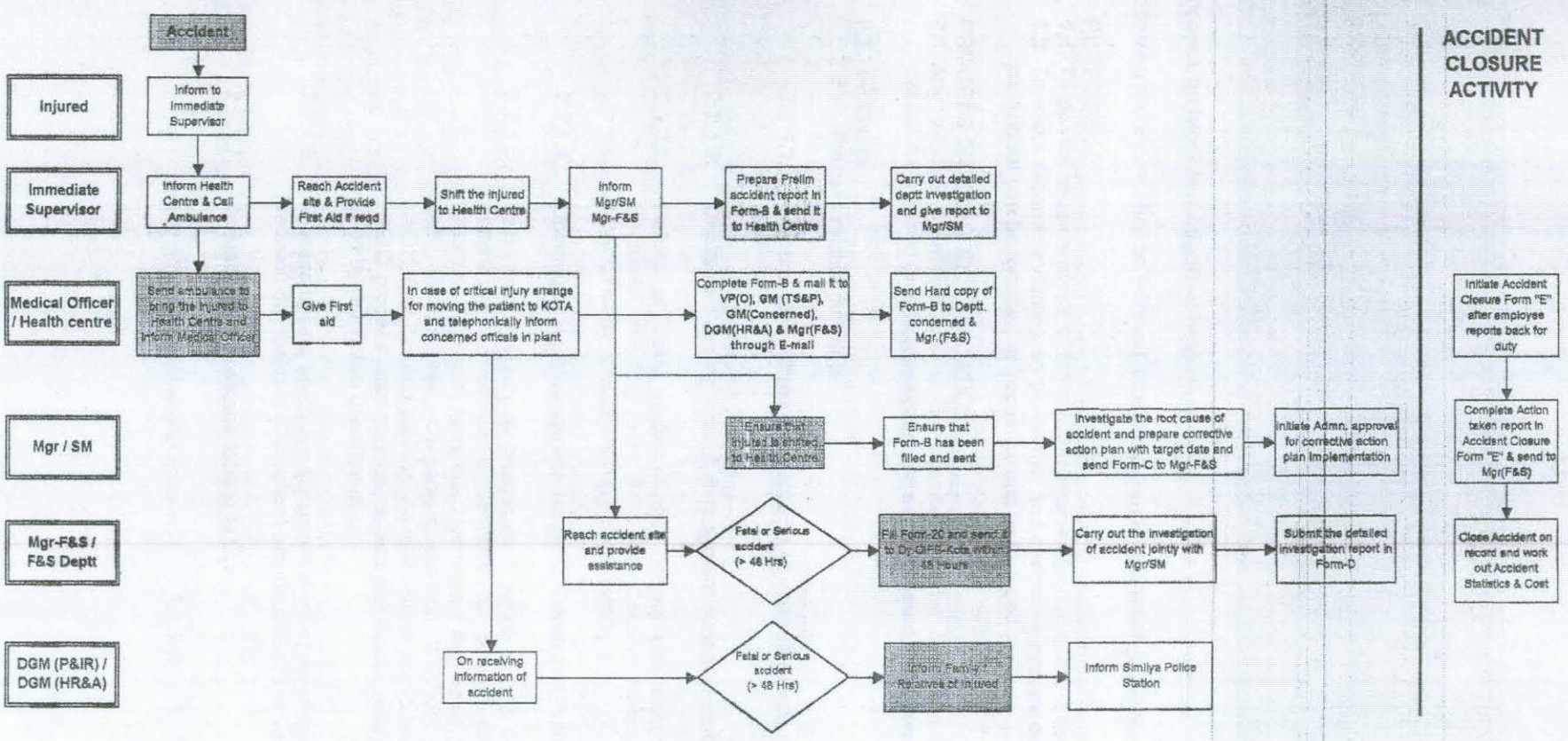
The pre-structured formats for reporting and investigation of accidents are enclosed as below :

Annexure-1 - Near Miss reporting format – "Form-A"
Annexure-2 - Accident reporting format – "Form-B"
Annexure-3 - Preliminary departmental accident investigation format-"Form-C"
Annexure-4 - Detailed accident reporting format – "Form-D"
Annexure-5 - Accident Closure Form – "Form-E"
Annexure-6 - Accident Reporting form to Inspectorate of Factories – "Form-20"
Annexure-7 - Make to Good Conditions Summary Report
Annexure-8 - Near Miss Incident Summary Report
Annexure-9 - Accident Summary Report
Annexure-10 - Month wise Accident Analysis Report – Contract Labour
Annexure-11 - Month wise Accident Analysis Report – Company Employee
Annexure-12 - Month wise Accident Analysis Report – Overall

9 RECORDS:

S.No.	Record Title	Location	Responsibility	Retention Time
1	First aid injury record	Concerned Plant	Section In-charge Mgr. F&S	5 years
2	Near Miss/ incident	Concerned Plant & F&S dept.	Section In-charge Mgr. F&S	5 years
3	Minor Injury /Loss Time Accident	Concerned Plant & F&S dept.	Section In-charge Mgr. F&S	All Time
4	Fatal Accident	F&S dept.	Mgr. F&S	All Time
5	Dangerous Occurrence	F&S dept.	Mgr. F&S	All Time
6	Notifying Disease	Health Centre	Medical Officer	All Time

COMMUNICATION / ACTION CHART FOR ACCIDENT REPORTING & INVESTIGATION



CHAMBAL FERTILISERS AND CHEMICALS LIMITED, GADEPAN KOTA		
EHS SYSTEM PROCEDURE IDENTIFICATION OF UNSAFE CONDITIONS / ACT & REPORTING OF NEAR MISS INCIDENT / ACCIDENT & PROCESS INCIDENT INVESTIGATION AND ANALYSIS		Doc. No. : EHS 05-05 (B) Rev. No. : 00 Eff.date : 16, FEB, 2009 Page No. : 1 of 4
Approved By: Unit Head	Issued By: MR	

Process Incident Investigation Procedure

Following procedure shall be followed for any Incident Investigation in plant:

1. **PURPOSE :**
   - **1.1.** To do root cause analysis of any process incident as define in 2.2 below.
   - **1.2.** To make recommendations so preventive and corrective actions can be taken, so incident can be avoided, or frequency can be reduced.

2. **PROCESS INCIDENT IDENTIFICATION**
   - **2.1.** Any Incident identified has to be classified by the SM-Plant in following categories & based on this investigation procedure should be followed.

   2.2. Incidents

   2.2.1. Process related incidents

   2.2.1.1. Process trips / Breakdown leading to downtime / unplanned down time

   2.2.1.2. Unplanned venting through flare system during Normal Operation

   2.2.1.3. Failure of Utility system during normal operation, Start-up & Shutdown affecting plant (Nitrogen, Cooling Water, HP & MP steam, Power, Instrument Air, Polish water)

   2.2.1.4. Opening of Relief valves connected to Steam and Process system

   2.2.1.5. Release of Hazardous Chemicals in which F & S and E & QC department assistance is required to control situation like; Chlorine, Ammonia, Naphtha, Hydrogen / Synthesis gas, Natural Gas, Molten Urea, Carbamate solution Sulphuric Acid, HCl, NaOH, GV/ Benfield solution. All other cases are to be recorded in HSEQ process incident records and root-cause analysis is to be done by respective department.

   2.2.1.6. Process upsets which are discussed in plant meetings and as per decision of President (Operation) are identified for investigations.

   2.2.1.7. Activation of pre-alarms related to trips.

2.3. All above incidents shall be informed by SM (Concerned Plant) to SM (Process).

3. Investigation team:

3.1. Incidents which are related to activation of Pre –Alarms related to trips (Point No 2.2.1.7.) are to be investigated by team comprising within plant and report is to be submitted to concerned GM. The suggested corrections are to be taken within department as per procedure.

3.2. Incident related to process upsets and not marked critical as per discussion in plant meetings/ Monday meetings are to be investigated by plant itself and report is to be submitted to concerned GM.

3.3. All other incidents as mentioned above from point no 2.2.1.1 to 2.2.1.5 are to be investigated by a team headed by SM (Process). The team members are

3.3.1. SM (Process) / SM (Project) (In case of Breakdown incidents, SM (Project) will lead the team)

3.3.2. Manager (Concerned plant)

3.3.3. Any one maintenance manager or more as per the process incident

3.3.4. Person deputed by CGM or President (Operation)

4. Investigation time:

All incident investigation process is to be started within 48 hrs of the Process Incident / Miss Incident investigation report format (attached).

5. Incident Investigation form:

5.1. Type of incident is to be marked as per the case may be in the form.

5.2. Cost of incident is to be calculated by process department and same is to be recorded.

5.3. Injured persons if any including contractor employees are to be recorded in the form.

5.4. Incident is to be investigated under the following headings

5.4.1. Write the incident under the heading of **"what happened"**.

5.4.2. Write down the events, facts preceding the incidents as per the alarm list, log book records, data available under the heading of **"How did it happened"**.

5.4.3. Do root cause analysis of the incidents, and record the same under the heading of **"Why did it happen"**. Additional sheets may be attached and referred to in the form.

5.4.4. Based on above analysis, mark the PSM elements that failed to prevent the incident and where improvement is needed in the PSM system.

5.4.5. Based on above analysis mark the recurrence probability of the incident as High/Low/None.

5.5. Recommendations as agreed to prevent recurrence are to be recorded. All recommendations should have target date of completion & specified responsibility of executing department.

5.6. Investigation report is to be sent for review to GM (P), GM (M), CGM (TS&P) & then President Operation.

5.7. After review when report is received by SM (Process) / SM (Project), SM (Process) will forward this report to SM (Executing Deptt.) for implementation of recommendations. In the recommendations if any "Change" is required, then Management of change procedure should be followed.

5.8. SM (Process) will track for Physical implementation of all the recommendations.

5.9. After having confirmation from respective SMs (Executing deptt.) about implementation of recommendations, incident closure is to be marked by SM (Process) and report is to be sent to President –Operation.

5.10. SM (Concerned Plant) is responsible for conducting on the job training sessions for communicating the results of the incident investigation to all concerned plant personnel. This training must be recorded.

6.0 Records:

6.1 Completed process incident investigations will be maintained by SM (Process).

6.2 Training records for operating personnel will be maintained by concerned SM – Plant.

PROCESS INCIDENT / MISS INCIDENT INVESTIGATION REPORT
(To be started within 48 hrs.)

Report No.: CFCL/TSP/Process/2008-

Unit: Date:

Area or Equipment where incident occurred:

Time of Incident:

Classification of Incident: (Tick as applicable)

FIRE ◯ EXPLOSION ◯ CHEMICAL RELEASE ◯

PROCESS RELATED ◯

- ☐ PROCESS UPSETS (CRITICAL) – DECIDED IN PLANT MEETING
- ☐ PROCESS TRIPS / BREAKDOWN LEADING TO DOWNTIME / UNPLANNED DOWNTIME
- ☐ UNPLANNED VENTING THROUGH FLARE SYSTEM DURING NORMAL OPERATION
- ☐ FAILURE OF UTILITY SYSTEM DURING NORMAL OPERATION, START UP AND SHUTDOWN AFFECTING PLANT
- ☐ ACTIVATION OF PRE ALARM RELATED TO TRIPS
- ☐ OPENING OF RELIEF VALVES CONNECTED TO STEAM AND PROCESS SYSTEM
- ☐ RELEASE OF HAZARDOUS CHEMICALS IN WHICH FIRE AND SAFETY DEPARTMENT ASSISTANCE IS REQUIRED TO CONTROL SITUATION

Cost of incident Rs (in lacs) : .....

Name(s) of injured employee(s) (if any) :

	Name	EPR No.
1.		
2.		
3.		

Injured contractor employee:
(If contractor employee is involved)

	Name	Gate Pass No.	Contactor's Name
1.			
2.			
3.			

Is there any damage to the equipment, specify.

What happened? (Write the incident)

How did it happen? (Write down the events preceding the incident)

Why did it happen? (Write down the root causes of the incident)

Which of the elements of PSM failed to prevent the incident and where is improvement needed in the PSM system?

Probability of incident recurrence:

☐ High ☐ Low ☐ None