1. **EMERGENCY SITUATIONS IDENTIFIED FOR PRODUCTION DEPARTMENT:**
2. Bursting of Blow Pipe
3. Hearth break out
4. Tap hole break out
5. Coke spillage from bleeder
6. Fire/Explosion in Gas line.
7. Sudden Failure of Cooling water
8. Gas poisoning
9. Ladle Puncture
10. Metal leakage from main runner

1. **Blowpipe Bursting**

**a. Resources Required:**

1. Communication facilities like mobile/ Walkie Talkies/Telephones
2. Ambulance
3. Medical aid/ First aid equipment
4. First aid personnel and helpers
5. Safety stock of over coat, hand gloves, face shield.
6. Barricading tap

**b. Response Plan:**

1. Evacuate and alert everybody in the cast house to stay away from the tuyere platform.

2. Reduce the wind volume to safe minimum and open the cast if the furnace is due for tapping.

3. Take shutdown after draining the furnace.

4. Replace the blowpipe and analyse the reasons for the same.

c. **Mitigation Measures:**

* + 1. Barricading affected area.
    2. Reduce wind as per furnace condition.
    3. Furnace in charge/SS/HOD should take charge of situation.

d. **Legal obligation: Nil**

**e. Records:**

* + 1. Mock Drill Report
    2. Incident Report
    3. Incident Investigation Report

1. Reporting:

The reporting of the incidents will be done by respective Furnace Incharge/SS - Production

**2. Hearth break out**

1. **Resources Required**:
2. Communication facilities like mobile/ Walkie Talkies/Telephones.
3. Ambulance
4. Medical aid/ First aid equipment
5. First aid personnel and helpers.
6. Portable CO monitor
7. Barricading tap
8. **Response plan:**

Hearth break out of serious nature (i.e. all metal, slag and coke is out)

1. Evacuate and alert everybody to stay away from the hearth area and cast house, cordon off all the entry points to the hearth area.

1. Reduce the wind volume, open the snort valve, open the bleeder valves if possible and stop the blowers. Inform GEL regarding wind reduction/shut down.

2. Open the pressure relief valve on furnace top. (Equalization Valve - 1)

3. Back draft the furnace by opening the coffee pot valve.

4. Cool the hot metal and slag with water and rescue any persons, if trapped and could not be removed earlier.

5. Do the necessary repair job.

1. **Mitigation Measures**

1. Cast house area and ladle kitchen floor to be barricaded.

2. Furnace in charge/SS/HOD should take charge of situation.

3. Avoid metal contact with water.

1. **Legal obligation: nil**
2. **Records**
   * 1. Mock Drill Report
     2. Incident Report
     3. Incident Investigation Report
3. **Reporting:**

The reporting of the incidents will be done by respective Furnace Incharge/SS – Production

**3. Tap hole breakout**

**a. Resources Required:**

1. Communication facilities like mobile/ Walkie Talkies/Telephones.
2. Ambulance
3. Medical aid/ First aid equipment
4. First aid personnel and helpers.
5. Portable CO monitor
6. Barricading tap

**b. Response plan:**

1. Evacuate all the people around the area to a safe distance other than those leading to breakout area.
2. Cordon off the unsafe area.
3. Address on PA system and alert all concerned in the plant.
4. Call ambulance and keep all medical facilities ready for any casualty.
5. Reduce the wind volume to minimum and maintain the blast pressure at 0 .10 kg /CM2 (if required keep only two blowers running to drain the furnace of metal and slag.
6. Shut down the furnace as per procedure WI/PROD/06 (depending on the situation – whether hot metal/slag is flowing into the runner or outside the runner).
7. Cool the hot metal and slag with water.
8. Inform HOD - Production and AGM -PID for further action.

**c. Mitigation Measures:**

1. Cast house area and ladle kitchen floor to be barricaded.

2. Furnace in charge/SS/HOD should take charge of situation.

**Legal obligation: Nil**

**e. Records:**

The reporting of the incidents will be done by respective SS/ Furnace in charge

**4. Coke shower from bleeder**

**a. Resources Required**

1. Communication facilities like mobile/ Walkie Talkies/Telephones
2. Medical aid/ First aid equipment
3. First aid personnel and helpers
4. Barricading tap

**b. Response plan:**

1. Alert and barricade the surrounding areas namely PCM, glendon and 27 mtr area and communicate everyone about the possible coke shower subsequent to furnace slip.

**c. Mitigation Measures:**

1. Cutting of dry grass around furnace area.

2. Maintaining fire extinguisher at different locations

3. Periodic checking of fire hydrant circuit

4. Effectiveness of PA, walkie talkies

5. Mock drills, Trainings, Interactions.

**d. Legal obligation: Nil**

**e. Records:**

1. Mock Drill Report

2. Incident Report

3. Incident Investigation Report

f. **Reporting**:

The reporting of the incidents will be done by SS/ Furnace in charge.

**5. Fire/Explosion in Gas line.**

1. **Resources Required:**

1. Communication facilities like mobile/ Walkie Talkies/Telephones

2. Medical aid/ First aid equipment

3. First aid personnel and helpers

4. Barricading tap

5. Assembly point to be identified

6. Portable CO monitor

**b) Response plan:**

1. Inform GEL regarding the wind reduction.

2. Steam purge the affected gas line.

3. Isolate the affected Blast Furnace by water sealing the gas line (depending on the location of explosion in gas line, appropriate isolation of respective furnaces from the gas line to be done).

4. If required, reduce wind volume and keep the bleeders opened. Open the cast immediately and dry the furnace.

5. Take shut down as per procedure.

6. Inspect and find out the reason for explosion.

7. Isolate the concerned gas line, by putting a blank if there is any need of welding work.

8. Hand over the gas line to Mechanical for repairs.

1. **Mitigation Measures:**

1. Display of sign boards (gas prone area, be aware of gas) at concerned area.

2. Availability of online CO monitor at GCS area.

3. Effectiveness of PA, walkie talkies

4. Availability of Ambulance and Ambulance Driver @ 24 hrs.

1. **Legal obligation: Nil**
2. **Records:**

1. Mock Drill Report

2. Incident Report

3. Incident Investigation Report

1. **Reporting**:

The reporting of the incidents will be done to the SS/ Furnace in charge

**6. Sudden Failure of Cooling tower water**

1. Resources Required:

1. Stand by water line from overhead tank

2. Stand by return water pump

3. Provision for water change over to fresh water line

4. Availability of water tankers if required

* + - 1. **Response plan:**

1. Shift Superintendent / Cast House Engineer will take the following measures.

2. Cast should be opened immediately and the furnace to be dried.

3. Change over the water connection to fire hydrant line for tuyere and tuyere cooler.

4. Shutdown to be taken as per procedure.

5. All copper members are to be inspected for burning and changed, if required.

6. Inspection to be done and the reason for water failure is to be found out.

7. In case of pipe line rupture, change over to the standby line.

8. In case overhead tank level is low due to.

9. Shortage of water

10. Start recirculation of the return in water closed circuit and start the furnace immediately with jetty water makeup.

11. Water arrangement to be done by plying water tankers.

12. Damage to the overhead tank or the incoming pipe line before valve.

13. Drain the water completely and repair the tank / pipe line.

14. In the meantime furnace is to be started with recirculation of return water with the addition of jetty pump.

* + - 1. **Mitigation Measures:**

1. Indication of water pressure drop should pop out in Control room

2. Overhead tank water level to be maintained.

3. Availability of water pressure gauge for all cooling members

* + - 1. **Legal obligation:** Nil
      2. **Records:**

1. Mock Drill Report

2. Incident Report

3. Incident Investigation Report

* + - 1. **Reporting**:

The reporting of the incidents will be done to the respective Furnace In charge/ Shift Superintendent.

**07 Gas poisoning**

**Resources Required:**

1. Communication facilities like mobile/ Walkie Talkies/Telephones.

2. Ambulance

3. Medical aid/ First aid equipment

4. First aid personnel and helpers.

5. Portable CO monitor

6. Barricading tap

1. **Response plan:**
2. Whenever a person is found affected by BF gas, remove the person to a safe place free of gas.
3. Evacuate the place where the presence of gas is suspected. Do not start work until the area is declared free of gas by HOD (Prod)
4. Gas affected person should not be allowed to walk or run but should be carried by stretcher or ambulance.
5. Loosen the garments of the victim, but keep him warm with his garments.
6. Do not allow others to crowd, keep his head on one side and open his mouth.
7. Start artificial respiration with 15 - 18 movements / min till first aid arrives.
8. Information should be given to any of blast furnace control rooms or any company officer.
9. Preparation of a Gas affected person for artificial respiration:
10. If a person is affected by gas (poisonous) and has lost consciousness, it is necessary to:
11. Take him out immediately in open air and at the same time, call the doctor.
12. Unbutton clothes hindering breathing.
13. Examine oral cavity if there are extraneous substances in it.
14. Clean oral cavity if there are extraneous substances in it
15. Pull out the tongue with the help of a tongue holder or with fingers wrapped in a clean handkerchief.
16. If the poisoned person does not breathe, begin making artificial respiration immediately. If respiration is normal don't give artificial respiration but put oxygen.
17. Method of Artificial Respiration:
18. A person affected by gas must be laid on his back. His rolled up clothes must be out under his shoulder blades so that his thorax should expand in a natural way.
19. All preliminary measures indicated in item a, b c and d must be carried out.
20. Then one must kneel near the head of the affected person, take hold of his arms below elbows near to wrists and pull them with force from the sides of his chest behind his head so that the elbows should touch the ground or the floor. In this position the arms must be held for about 2 seconds. During this position the act of inhalation takes place.
21. After this one should pull the arms in the reverse direction, bending them at the elbows and pressing them to the thorax for about 2 seconds at the act of exhalation.
22. In a minute 16 to 18 acts of inhalation and 16 to 18 acts of exhalation must be performed.
23. Arms must be detained in extreme positions.
24. Checking for presence of Gas
25. If any person complaints of headache or giddiness at work place it must be assumed that he was affected by gas unless it is proved otherwise with the help of proper gas checking procedure mentioned below that the area is free of gas.
26. No person should check for gas unless he wears a gas mask. Minimum 2 persons should go in the area for checking the presence of gas and other persons should be ready in fresh air for helping in case of any emergency.
27. No person shall enter in the gas area for rescue without wearing a gas mask.
28. The HOD (Prod) along with S.S. and selected team members should investigate the reason for presence of gas and take steps to rectify the same.
29. The team going for investigation should carry at least two gas detectors.
30. Any steam or smoke should be considered as gas unless it is proved otherwise.
31. **Mitigation Measures:**
32. **Legal obligation:** Nil
33. **Records:**

1. Mock Drill Report

2. Incident Report

3. Incident Investigation Report

1. **Reporting**:

The reporting of the incidents will be done to the respective SS/ Furnace in charge.

8. **Ladle Puncture**

**a. Resources Required:**

1. Communication facilities like mobile/ Walkie Talkies/Telephones.
2. Ambulance
3. Medical aid/ First aid equipment
4. First aid personnel and helpers.
5. Barricading tap

**Response plan:**

1. Evacuate all the people around the area to a safe distance through the emergency exits other than those leading to breakout area.

2. Cordon off the unsafe area

3. Address on PA system and alert all concerned in the plant

4. Call ambulance and keep all medical facilities ready for any casualty.

5. Reduce the wind volume to minimum and maintain the blast pressure at 0 .10 kg /Cm2 (if required keep only two blowers ringing to drain the furnace of metal and slag.

6. Shut down the furnace as per procedure WI/PROD/06 (based on severity of incident)

7. Cool the hot metal with water.

8. Inform HOD - Production & Development and AGM -PID for further action.

**c. Mitigation Measures:**

1. Area affected to be barricaded (Cast house/PCM area)

2. Furnace in charge/HOD should take charge of situation.

**Legal obligation: Nil**

**e. Records:**

The reporting of the incidents will be done to the respective SS/ Furnace in charge

**9. Metal leakage from main Runner**

1. **Resources Required**:
2. Communication facilities like mobile/ Walkie Talkies/Telephones.
3. Ambulance
4. Medical aid/ First aid equipment
5. First aid personnel and helpers.
6. Portable CO monitor
7. Barricading tap
8. **Response plan:**

Runner puncture is of serious nature (i.e all metal and slag is out)

1. Reduce the wind volume, open the snort valve, open the bleeder valves if possible and stop the blowers. Inform GEL regarding wind reduction. Take furnace shutdown as per SOP.

2. Open the pressure relief valve on furnace top. (Equalization Valve - 1)

3. Back draft the furnace by opening the coffee pot valve.

4. Cool the hot metal and slag with water and rescue any persons, if trapped and could not be removed earlier.

5. Identify the punctured point in main runner and assess the necessary repair job.

1. **Mitigation Measures**

1. Cast house area and ladle kitchen floor to be barricaded.

2. Furnace in charge/HOD should take charge of situation.

3. Avoid metal contact with water.

1. **Legal obligation: nil**
2. **Records**
   * 1. Mock Drill Report
     2. Incident Report
     3. Incident Investigation Report
3. **Reporting:**

The reporting of the incidents will be done to the respective Furnace Incharge - Production

1. **CONTACT DETAILS**

In an emergency situation, following are the contact persons along with their contact nos. whom the Production Shift Engineer/ Production Shift In-Charge will contact:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Function | Location | | | |
| PID | Contact No. | MCD | Contact No. |
| Head- Pig Iron Division | Mr. Susanta Ganguli | Mob: 9302321928  Ext: 200 |  |  |
| HOD- Production | Mr. Dhiraj Agarwal | Mob: 9975863055  Ext: 285 |  |  |
| Head HSC | Mr. Krishna Kulkarni | Mob - 9922436882  Ext - 328 |  |  |
| Resident Doctor | Mr. Dr. Abel Da Costa | M – 9420974102  Ext-222 |  |  |
| Security In charge | Mr. Nand Bhatt | M – 8866058632  Ext: 408 |  |  |

|  |  |  |
| --- | --- | --- |
| **Prepared By:**  Control Room incharge | **Reviewed & Issued By:**  Management Representative | **Approved By:**  Head – Operations PID1 |
| **Signature:** | **Signature:** | **Signature:** |
| **Review Date: 08.08.2022** | **Review Date: 08.08.2022** | **Review Date: 08.08.2022** |