**WORK INSTRUCTIONS FOR CLEANING STORM DRAIN HUME PIPE DRAIN**

**Criteria**: To avoid water accumulation/ clear silted material

**Responsibility:** Bag House in charge/ concerned staff/ Officer Incharge

**Identified Hazard:**

1. Contact with hot water
2. Contact with lime
3. Nonuse of PPE
4. Improper house keeping
5. Inadequate local lighting
6. Sudden water from cooling tower due to power failure.
7. Injuries due to fall
8. Suffocation due to less O2
9. Heat
10. Vehicle/crane movement
11. BFG poisoning
12. Skin irritation in tunnel.

**Significant Aspect:**

1. Water accumulation

2. Slurry generation

**Procedure:**

This is a **confined space; refer SP 44Y** for requirement and detailed guidelines for working.

**Please follow the following procedure**

**FOR MORE DETAILS REFER CENTRALISED CONFINED SPACE ENTRY SOP-VL/IMS/VAB/SP44 Y**

Confined Space Checks before job start up:

1. Before Entering in Confined Space ensure –

Confined space training to be given by trained trainer

1. Inside temperature should be less than 40°C.
2. CO Level should be 0 ppm & O2 level should be 19.5 to 23.5%
3. Attendant must ensure proper illumination & ventilation, if illumination not found ok, he must inform concern electrical person to provide hand lamp or halogen.
4. Take the work permit from production-in-charge, Safety, electrical, mechanical for entering Confined Space.
5. The workmen (Entrant) who is trained and certified by SBU Head and having valid confined space gate pass should perform the activity and he can be replaced (in emergency) only by certified entrant.
6. A standby (attendant) who is trained and certified by SBU Head and having valid confined space gate pass should perform the activity and he can be replaced (in emergency) only by certified attendant.
7. Standby person who shall be positioned outside the confined space, must have no other duties other than monitoring people and conditions inside the confined space and coordinating with rescue personnel (he must have contact number of rescue team members) if required.
8. Standby (Attendant) person has to log down the In/Out entry of all entrants and ensure that entrant should be come out after 30 minutes from confined space for normal jobs.
9. In some cases, In/Out time may be relaxed /extended based on the risk involved in the particular confined space.
10. Check Internal atmosphere of the space for sufficient oxygen content (19.5% to 23.5 %) flammable gases and vapors, and the potential for toxic air contaminants by the use of multi gas detector, if required use pump with extension before entering. If there is any deviation, do not enter into confined space.
11. Check for the presence of Chemical asphyxiates such as Carbon monoxide (CO gas detector). It should be 0 PPM
12. Check inside temperature and it should be is in the tolerable range (25°C to 40°C). If the temperature is not within limits, then appropriate ventilation to be used to normalize the temp.
13. Check for suitability of equipment that is used at the confined space.
14. Check any dust due to which visibility is reduced or respiratory tract is irritated.
15. The sign-in and sign-out of all persons entering into confined Space should be recorded.
16. Use 24V DC supply illumination to avoid electrocution/electric shock.
17. Cutting or welding jobs inside the confined space should be carried out after checking for every explosive environment (LEL should be <10%) and by providing localized suction or heavy-duty exhaust system to prevent accumulation of gases inside the space.

Please note that this area is considered as Confined Space so needs to maintain the checklist of the activity. All in time and out time details of entrants, levels of gases to be logged in checklist (yellow copy) or in any alternate document and to be documented.

**Role of Rescue Team**

**As the work is being carried out inside confined Space, in an emergency victim can be taken out by use of rescue apparatus such as stretcher. However, attendant should call ambulance which is fully equipped. However, rescue team members should take a charge of the situation.**

1. Unauthorized operation or repair of any equipment is a punishable offence

2. Use safety goggle, hand gloves, protective clothing and other PPE viz helmet, gum shoes, dust mask.

3. This activity is to be done under strict supervision of concerned supervisor from start to end of activity.

4. Concerned supervisor should take a permit from Area In charge before starting the activity.

5. If the storm drains is more than one meter deep then the ladder to be arranged for getting down in the drain. In the case of ladder should be used for getting down into the tunnel which will always be kept at the entry point of the tunnel.

6. At a time only maximum four person to be allowed to work inside the Hume pipe Mud to be collected in ghamela and removed out of Hume pipe.

7. The supervisor in charge should ensure regular breaks for taking fresh air for person working inside the Hume pipe. Rotation of the people involved in the activity should be done frequently.

8. As far as possible forced ventilation should be provided. The manhole that are provided along the length are opened and hard barricading is done around the manhole.

9. If Hume pipe is completely chock from both the side then cleaning is to be taken up from both sides to make way for ventilation.

10. Water/Sludge coming from Hume pipe which require cleaning should be rerouted by providing necessary check dam, which should be monitored regularly by the supervisor.

11. Mud removed from Hume pipe to be shifted to designated place if required Hitachi /Backhoe to be used to clear the same with personal supervision.

12. If the drain/Hume pipe is 300 mm diameter or less then drain cleaning machine (kambore) is to be used. (Follow instructions for the use of this machine).

13. Do not use 230 volts lighting inside the drainpipe but instead battery or emergency lights can be used.24 volts supply wherever available should be used.

14. For Hume pipes which are not having much earthly mass and are being used by vehicular traffic above should be barricaded before cleaning. Vehicular traffic above should not be permitted when persons are inside the HUME pipe.

15. While cleaning Hume pipes from inside water to be diverted to other side of the cleaning area by inserting dam.

16. As both tunnels are located side by side CO as well O2 monitor is required to measure gas presence and ensure safe working.

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| Prepared By:  Head – Production PID I | Reviewed & Issued By:  Management Representative | Approved By:  Head – Pig Iron Division |
| Signature: | Signature: | Signature: |
| Date: **15.07.2022** | Date: **15.07.2022** | Date: **15.07.2022** |

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