**WORK INSTRUCTIONS FOR DUST CATCHER CLEANING**

**Responsibility: Shift Superintendent**

**Criteria: Safe working in dust catcher**

**Identified Hazards:**

1. BF Gas poisoning
2. Fall of a person while cleaning dust catcher
3. Contact with dust
4. Contact with hot water.
5. Nonuse of PPE’s (Behavioral)
6. Improper house keeping
7. Inadequate local lighting
8. Forgot to switch off the GCS pump while water sealing saturator (Behavioral)
9. Not carrying CO detector.
10. Dust inhalation
11. Burns due to contact with hot object/ Dust surface

**Significant Aspect**:

1. Usage of water
2. Generation of dust

**Procedure for Dust catcher cleaning:**

**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 –
2. Inside temperature should be less than 40°C.
3. CO Level should be 0 ppm
4. Attendant must ensure proper illumination, if illumination not found ok, he must inform concern electrical person to provide hand lamp or halogen.
5. Take the work permit from production-in-charge, Safety, electrical, mechanical for entering Confined Space.
6. 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 .
7. 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.
8. 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.
9. 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.
10. In some cases, In/Out time may be relaxed /extended based on the risk involved in the particular confined space.
11. Check Internal atmosphere of the space for sufficient oxygen content (19.5% to 23.5 %) flammable gases and vapours, 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.
12. Check for the presence of Chemical asphyxiates such as Carbon monoxide (CO gas detector). It should be 0 PPM
13. 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.
14. Check for suitability of equipment that is used at the confined space.
15. Check any dust due to which visibility is reduced or respiratory tract is irritated.
16. The sign-in and sign-out of all persons entering into confined Space should be recorded.
17. Use 24V DC supply illumination to avoid electrocution/electric shock.
18. Cutting or welding jobs inside the confined space should be carried out after checking for any explosive environment (LEL should be <10%) and by providing localized suction or heavy-duty exhaust systems 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.**

**Do not enter the dust catcher unless it is very much necessary**

1. Unauthorized operation or repair of any equipment is a punishable offence
2. Ensure furnace top fire is uniformly lit over the cross section, if required cotton waste to be thrown inside to facilitate proper burning of gas.
3. Ensure steam purging is done in dust catcher, saturator, venturi, cyclone and up to the mainline water seal. Keep open all relief valves.
4. Close the steam valves to the gas cleaning after steam purging.
5. Drain saturator water seal.
6. Open all the inspection door flanges on dust catcher
7. Open dust catcher bell & bottom gate after steam purging, for air purging and better droughting
8. Ensure Main gas line is kept water sealed and sufficient overflow of water from the seal is maintained.
9. Ensure lockout pad is put around water sealing valve wheel and locked and ensure slight continuous overflow of water from the seal.
10. Ensure that there is no surge in gas line at the water seal and keep one man to have constant watch on the overflow.
11. Ensure BFG of the other running furnace is uniformly regulated by GEPL or through flare stack to avoid surge.
12. Ensure dust to be shifted before doing any activity.
13. Ensure both bleeders are fully open and don’t allow closing of bleeders when cleaning is in progress including opening of the uptake inspection door shouldn’t be done.
14. Check the presence of CO with the help of detector
15. Take a long bamboo and loosen all the dust through the manhole.
16. Check for any overhang of material inside the dust catcher
17. In case if it is very much necessary to enter the dust catcher ensure a blank is put just at the inlet of dust catcher, wear safety helmet, compressed air gas mask (if required) and ensure positive air pressure inside the face mask and safety belt to go inside the dust catcher for inspection /cleaning. Check the O2 level also with the help of oxygen monitor which is available with instrumentation department (Oxygen level should not be less than 17%)
18. Ensure sufficient illumination inside the dust catcher.
19. Put a wooden plank across the bell opening of the dust catcher for better stability for the person inside.
20. Ensure no work permits are issued for cutting & welding jobs on the gas line other than the one issued for cleaning the dust catcher.
21. Ensure one spare compress air gas mask is kept for any emergency at dust catcher.

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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: 10.07.2023** | **Date: 10.07.2023** | **Date: 10.07.2023** |

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| **Amendment Record** | | | |
| **Revision date** | **Manual Section ref. and para** | **Brief details of revision** | **New Revision No.** |
| 12.07.2021 | Procedure for Dust Catcher cleaning | Point no 12 | 13 |
| **15.07.2022** | **Procedure for dust catcher cleaning** | **Change in format** | **14** |