Standard Operating Procedure and Checklist of Minimal Requisite Facilities for utilization of hazardous waste under Rule 9 of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016

Utilization of Phenolic Wastewater generated from Coal Gasifier condensate water

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Central Pollution Control Board
(Ministry of Environment, Forest & Climate Change, Government of India)
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Standard Operating Procedure and Checklist of Minimal Requisite Facilities for Utilization of Phenolic Wastewater generated from Coal Gasifier condensate water

Procedure for grant of authorisation by SPCBs/PCCs for utilization of Hazardous Waste

(i) While granting authorisation for utilization of hazardous wastes, SPCBs/PCCs shall ensure that authorisation is given only to those wastes for which SoPs on utilisation have been circulated by CPCB ensuring the following:

a. The waste (intended for utilization) should have similar source of generation as specified in SoPs.

b. The utilization process should be similar to the process of utilization described in SoPs.

c. End-use / product produced form the waste shall be same as specified in SoPs.

d. Authorisation shall be granted only after verification of minimum requisite facilities installed and after verification of utilization process as given in SoPs.

e. Issuance of passbooks (similar to the passbooks issued for recycling of use oils, waste oil, non-ferrous scraps, etc.) for maintaining records of receipt of hazardous wastes for utilization.

(ii) After issuance of authorization, SPCB shall verify the utilization process, checklist and SOPs, quarterly during the initial 02 years of operation followed by random checks in subsequent years atleast once in every year.

In-case of lack of requisite infrastructures with the SPCBs/PCCs, SPCBs/PCCs may engage 3rd party institutions and EPA/NABL/ISO17025 accredited laboratories for monitoring and analysis of prescribed parameters of the SoPs for verification purpose. Such labs shall have accreditation (EPA/NABL/ISO17025) for the parameters specified in SoP.

(iii) SPCB shall provide half yearly up-dated list of units permitted for utilization of hazardous waste to CPCB and also periodically update the same on SPCB website Such updated list shall sent for January-June and July- December of every year and reach to CPCB by July and January respectively of every year.

(iv) Authorisation for utilisation shall not be given to the units located in the State/UT where there is no Common TSDF, unless the unit ensures authorised captive disposal of the hazardous waste or its complete utilisation or arrangement of sharing with any other authorised disposal facility.

(v) In case of the utilization proposal is not similar with respect to source of generation, utilization process and end-use as outlined in this SoP, the same may be referred to CPCB for clarification / conducting trial utilization studies and developing SoPs.

(vi) The source and work zone standards suggested in the SoPs are based on the E(P)A notified and OSHA standards respectively, however, SPCB/PCC may impose more stringent standards based on the location or process specific conditions

23.0 Utilization of Phenolic Wastewater

Type of HW	Source of generation	Recovery/Product
Phenolic Waste water-Category S.No 1.4 of Schedule-I of HOWM Rules, 2016	Coal Gasifier condensate water	Quenching of hot gases in After Burning Chamber of Direct-reduced iron (DRI) kiln of Sponge Iron Industry

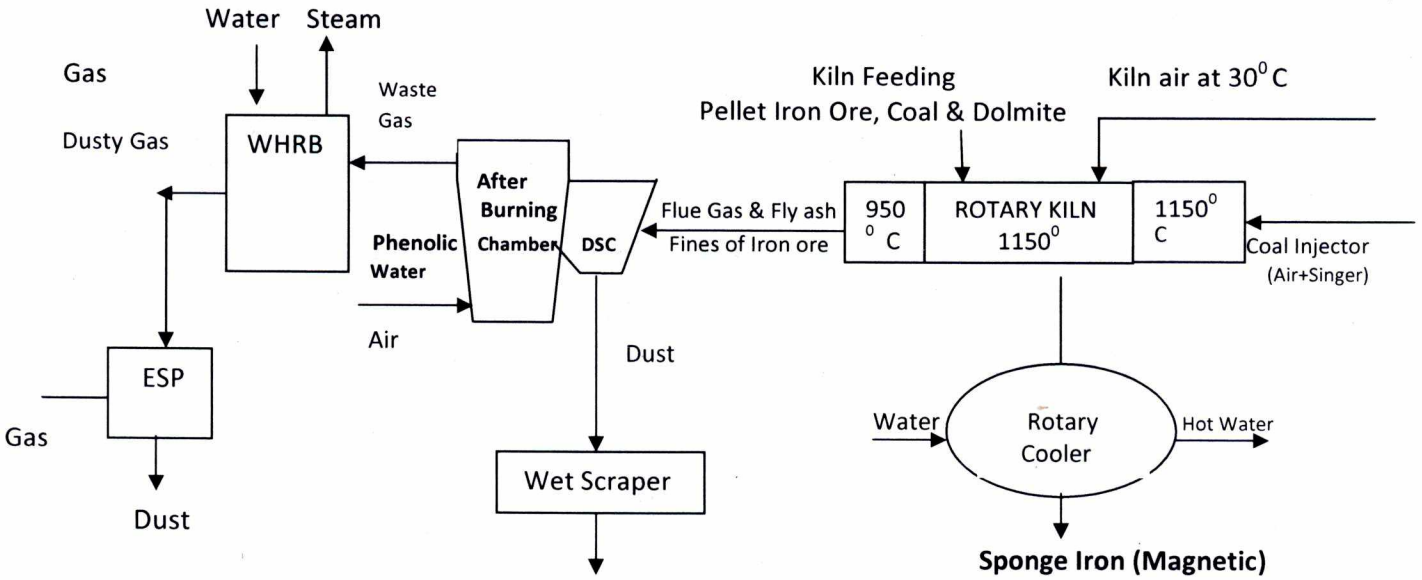
Standard Operating Procedure and Checklist of Minimal Requisite Facilities for Utilization of Phenolic Wastewater generated from Coal Gasifier condensate water

23.1 Source of Waste

Phenolic wastewater is generated as bleed water from wet scrubber used for cooling and cleaning of producer gas generated from coal gasifier. The Phenolic wastewater is categorized as hazardous waste as per S.No 1.4 of schedule-I of HOWM Rules, 2016.

23.2 Utilisation Process

The utilisation process involves use of the phenolic wastewater instead of fresh water in the After Burning Chamber (ABC) of Direct-reduced iron (DRI) kiln of Sponge Iron Industry for quenching and to regulate the temperature of hot flue gas in accordance with inlet requirement of Waste Heat Recovery Boiler.



23.3 Product Usage / Utilization

The Phenolic wastewater is used for quenching of hot gases in the After Burning Chamber (ABC) of DRI Kiln and to regulate the temperature of hot flue gas in accordance with inlet requirement of Waste Heat Recovery Boiler.

23.4 Standard Operating Procedure for utilization

This SoP is applicable only for utilization of phenolic wastewater generated as bleed water from wet scrubber used for cooling and cleaning of producer gas generated from coal

gasifier. The said phenolic wastewater may be used in After Burning Chamber of DRI kiln of Sponge Iron Industry for quenching and to regulate the temperature of hot flue gas.

(1) The phenolic wastewater shall be procured only in rubber lined tankers/HDPE drums in accordance with the provisions stipulated in Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016 .

(2) There should be a designated space for unloading of phenolic wastewater into acid – proof storage tank. The receiving storage tank shall be placed above the ground and contained with low raise bund wall & acid proof floor with slope to collect spillages, if any, into collection pit. Such storage tank shall be provided under covered shed so as to eliminate rain water intrusion.

(3) The spillages from collection pit shall be transferred to phenolic wastewater tank through chemical process pump

(4) Transfer of phenolic wastewater from the storage tank to the After Burner Chamber of the DRI Kiln shall be carried through pipeline and be injected into After Burner Chamber through nozzles.

(5) The unit shall install water meter to measure quantity and feed rate of phenolic wastewater being injected into After Burner Chamber.

(6) The unit shall maintain the gas inlet and outlet conditions in the said After Burner Chamber as per the details given below :

Inlet Temp (°C)	Outlet Temp (°C)	Flue gas residence time
950-1050	850-950	8-10 seconds

(7) Utilization of phenolic wastewater shall not be done during un-stable/breakdown conditions in the kiln or Waste Heat Recovery Boiler.

(8) The unit shall ensure that all personnel involved in the plant operation shall wear proper personal protective equipment such as masks, safety gloves, goggles, safety shoes etc.

(9) The unit shall obtain authorization from the concerned State Pollution Control Board under the Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016, for generation, storage and utilisation of Phenolic wastewater.

(10) The unit shall submit quarterly and annual information on Phenolic wastewater consumed, its source, quantity utilised or resources conserved (specifying the details like type and quantity of resources conserved) to the concerned SPCB.

(11) It shall be ensured that phenolic wastewater is procured from the industries who have valid authorization for the same from the concerned SPCB/PCC as required

under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

(12) In case of handing over the phenolic wastewater (generated from coal gasifier unit) to any DRI plant with After Burning Chamber for the said utilisation, the utiliser shall maintain a passbook issued by concerned SPCB wherein the following details of each procurement of phenolic wastewater shall be entered: -

- Address of the sender
- Date of dispatch
- Quantity procured
- Seal and signature of the sender
- Date of receipt in the premises

(13) A log book with information on source, quantity, quality, date wise utilization of phenolic wastewater, etc. shall be maintained including analysis report of emission monitoring & effluent discharged, as applicable.

(14) Transportation of phenolic wastewater (incase the phenolic wastewater is procured from other units) shall be carried out by the sender or receiver (generator/utilizer) as per the authorization issued by concerned SPCB under the Hazardous and Other Wastes (Management &Transboundary Movement) Rules, 2016

(15) The unit shall maintain record of hazardous waste generated/utilised as per Form 3 & shall file annual returns in Form 4 as per Rule 20 (1) and (2) of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, to SPCB.

(16) In case of environmental damages arising due to improper handling of hazardous wastes including accidental spillage during generation, storage, processing, transportation and disposal, the unit shall be liable to implement immediate response measures, environmental site assessment and remediation of contaminated soil/groundwater/sediment etc. as per the "Guidelines on Implementing Liabilities for Environmental Damages due to Handling & Disposal of Hazardous Wastes and Penalty" published by CPCB.

(17) During the process of utilization and handling of hazardous waste, the unit shall comply with the requirements in accordance with the Public Liability Insurance Act, 1991 as amended, wherever applicable.

23.5 Standards

(1) Source emission standards shall comply with following :

(i) The stack emission shall not exceed parameters limit as stipulated under the Consent to Operate granted by concerned SPCB under the Air (Prevention & Control of Pollution) Act, 1984;

(ii) The Total Organic Carbon (TOC) and Carbon Monoxide (CO) shall not exceed 10 mg/Nm3 and 100 mg/Nm3 respectively (when corrected at 11% O_2).

(2) Monitoring of the specified source emissions shall be carried out quarterly for the first year followed by atleast annually in the subsequent year of utilisation. The monitoring shall be carried out by NABL/EPA accredited laboratories and the results shall be submitted to the concerned SPCB quarterly.

23.6 Siting of Industry

The SOP is applicable only for utilisation of Phenolic wastewater in After Burning Chamber of the DRI Kiln of Sponge Iron Industry already in operation, hence siting is not applicable.

23.7 Size of Plant & Efficiency of utilisation

For a typical After Burning Chamber of size 100000 Nm3 per hour, consumption of phenolic wastewater shall not exceed 250 LPH with maximum consumption upto 6 KLD. Hence, requisite facilities of adequate size shall be installed accordingly.

23.8 On-line detectors / Alarms / Analysers

Online detectors/alarms/analysers are not recommended for batch type processing units. However, in case of continuous process operations, online emission analysers for PM, CO and TOC in the stack shall be installed and the online emission data shall be connected with the server of concerned State Pollution Control Board and CPCB.

23.9 Checklist of Minimal Requisite Facilities:

S.No	Requisite Facilities
1.	Covered Storage tank for phenolic wastewater with acid proof lining to store minimum capacity equivalent to 05 days
2.	The storage tank shall be placed above the ground and contained with low raised bund wall & acid proof floor with slope to channelize spillages into collection pit.
3	Water meter to measure quantity and feed rate of phenolic wastewater in After Burning Chamber
4.	Adequate cover over phenolic wastewater storage tank, transfer pump, intermediate tank etc. so as to eliminate any contact with rain water.
5.	Dust Settling Chamber connected to DRI Kiln
6.	Nozzle system for injecting Phenolic wastewater into After Burning Chamber
7.	Waste Heat Recovery Boiler
8.	Bag House Dust Collectors/ Electrostatic Precipitators
9.	Stack shall have easy access to port hole for conducting stack monitoring.
10.	Online analyzers for PM, TOC & CO emission monitoring in stack with connection to the server of SPCB and CPCB.

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