43977/2022/WM-II-HO

Central Pollution Control Board
Waste Management - II Division, Delhi

Sub: Minutes of the 28th virtual meeting of the Technical Expert Committee (TEC) for "Evaluation of proposals for utilization of hazardous wastes under Hazardous and Other Wastes (Management and Transboundary Movement) (HOWM) Rules, 2016".

1. 28th meeting of TEC for "Evaluation of proposals received from various industries for utilization of hazardous wastes under Rule 9 of HOWM Rules, 2016" was held virtually during 5th & 6th April, 2022.

2. Sh. Anil C. Ranveer, Member Convener & Sc. E, Waste Management-II Division, CPCB, Delhi, welcomed the Chairman and members of the committee and also requested for their brief introduction as the TEC has reconstituted. A list of the participants is enclosed at *Annexure A*.

3. Draft Standard Operating Procedures (SoPs) & Checklist of Minimal Requisite facilities for utilization of hazardous waste prepared by WM-II Division, CPCB, based on trial study reports were reviewed and discussed by the committee. Recommendations of the committee are tabulated below:

Sl. No.	SoP	TEC Recommendations
1.	SoP for utilization of Spent Sulphuric acid (SSA) [generated during Linear Alkyl Benzene Sulphonic Acid (LABSA) production] in manufacturing of Single Super Phosphate (SSP). (M/s Nirma Ltd., Ahmedabad, Gujarat)	M/s Nirma Ltd, Ahmedabad, has presented the details of trial run conducted for utilization of Spent Sulphuric Acid (SSA) [generated during LABSA process] in manufacturing of the single super phosphate (SSP), along with details of short-term and long term study. The unit representative informed that all the monitored parameters during the trial run are within the prescribed limit. The representative from Anand Agricultural University informed that the preliminary ecological studies being carried out show no adverse effects of manufactured SSP on soil and seeds. They also briefed about the long-term study being carried out on crops (Maize, Mustard, etc.) and soil. Upon deliberation, the committee observed the following: i. High concentration of Arsenic in manufactured SSP from SSA. However, analysis of SSA does not detect arsenic. The

		higher concentration of arsenic may be attributed to rock phosphate or other raw materials used in the process for manufacturing of SSP. ii. SSA generated from Linear Alkyl Benzene (LAB) manufacturing process may contain unreacted raw material and organic contaminants. In this regard, SSA needs to analysed through Gas chromatography–mass spectrometry (GC-MS))/Liquid Chromatography-mass spectrometry (LC-MS) by the unit for respective hazardous constituents such as Linear Alkyl Benzene, Benzene, etc. All such hazardous constituents, present if any, in the SSA, will also need to be monitored in the SSP. iii. The preconditioned parameters varied during the study needs to be mentioned. The study may include mixing concentration limits of SSA with other raw material for manufacturing of SSP. Precautions for farmers to handle this SSP shall be incorporated into SoP. Anand Agricultural University may also recommend in their long term study for the details regarding the concentration levels of SSP (manufactured from SSA) that can be allowed. The committee recommended that analysis/ detailed information as suggested above are critical and needs to be conducted/monitored during studies. The reports/findings of these studies shall be discussed in the subsequent TEC.
2.	SoP for utilization of ETP sludge (generated from waste water treatment of ceramic industries) as raw material in the manufacturing of Ceramic Glaze Mixture and Industrial ceramics	The representative from the unit has presented the details of trial run conducted along with the monitoring results. Upon deliberation, the committee observed monitored parameters are within prescribed limits and about various advantages of the proposal which aid in the good resource recovery. The committee suggested same may be encouraged as the sludge generated is inert in nature and contains vitrified

	(M/s Cera-Tech Ceramics, Khambat, Gujarat)	matter. The committee suggested to analyse flue gas for Heavy Metal concentrations as salts having heavy metals are used in Ceramic industries as coloring chemicals and recommended for finalization of SoP.
3.	SoP for Utilization of Caffeine Liquor (Containing Caffeine <2.5 %) for Recovery of Caffeine (M/s Aarti Industries Ltd., Palghar, Maharashtra)	Upon deliberation, the committee observed the following: i. The proposed utilization is only the additional step in the existing process for further recovery of Caffeine from Caffeine liquor. ii. Monitored parameters are within prescribed limits. iii. During the trial study MEE has been used for the treatment of the effluent, thus MEE shall be included as an effluent treatment method in SoP. The committee recommended for finalization of SoP with inclusion of above suggestion.
4.	Revision for existing SoP for utilization of spent alkali/acidic bromide (generated during manufacturing of various pesticides, pharmaceuticals and organic chemicals) for recovery of liquid bromine for exclusion of specific treatment method of waste water (M/s Balaji Tex Fab, Surat, Gujarat)	The representative from the unit has made the technical presentation. Upon deliberation, the committee observed that the unit is involved in the recovery of Bromine as per SoP for utilization of spent alkali/acidic bromide. The hazardous waste utilization has the potential to generate waste stream with high COD which is required to be properly treated and disposed of. The unit's request regarding the exclusion of waste water treatment method shall require ground assessment. The committee recommends that the hazardous waste utilizing units shall achieve ZLD for treated wastewater. However, in case it is not possible to achieve the ZLD, the option for discharge after treatment shall be considered. The committee recommended for joint inspection of the unit and CETP by CPCB and GPCB to assess the facility involved in recovery of bromine as well

		as technologies/methods available at CETP for treatment of effluent.
5.	Revision of existing SoP for utilization of synthetic oil based mud/oil based drill cutting waste in road construction for inclusion of utilization as marginal material in making of fly ash bricks (M/s SAR Chandra Environ Solutions Pvt. Ltd., Kakinada, A.P.)	The representative from the unit has made the technical presentation. Upon deliberation, the committee observed that utilization of the said waste as a sub-base for road construction will not have direct with workers dealing with the waste. However, utilization of the said waste for brick making may result in direct contact of the workers with the waste. The committee recommended for the trial run to study the leaching characteristic of bricks manufactured from the treated drilling waste to assess the health impact.
6.	Revision of existing SoP for utilization of tarry residue (generated from coal gasifiers) in manufacturing of Naphthalene/Creosote Oil and Coal Tar Pitch for inclusion of utilization of coal tar sludge as hazardous waste (M/s Konark Tar Product, Durgapur, W.B.)	As per recommendations of TEC in its 18th meeting held on 21.11.2019, CPCB sought information on the analysis of coal tar sludge, source of hazardous waste generation, etc. from the applicant and deliberated in the meeting. The committee observed that the source of generation of hazardous wastes (Tarry residue and Coal Tar Sludge) are different but possess similar characteristics. The committee recommended for revision of the existing SoP, depicting the source of generation of hazardous wastes separately.

4. The following applicants were requested to make the technical presentation about their utilization proposal before the committee:

   i. M/s Aarti Industries Ltd., Plot. No: L-5, L-8, L-9/1, MIDC Tarapur, Tal & Dist: Palghar, 401506 Maharashtra.

   ii. M/s. Aarti Industries Limited, Plot No. K-17/18/19, MIDC Tarapur, Boisar, Tal./Dist. Palghar, Maharashtra.

   iii. M/s JS Minchem, Udaipur, Rajasthan.

   iv. M/s Shri Mahavir Ferro Alloys, Kalunga Industrial Estate, Odisha.

   v. M/s SRF Ltd., Jhiwana, Rajasthan

vi. M/s Sri Varu Industries, Plot No. B-53, Plot No. B-53, 10th cross, Industrial Estate, Nelmangala, Karnataka

The details of the proposals along with the recommendations of the committee on the above proposals are given in ***Annexure-B***.

5. The meeting ended with a vote of thanks to the chair.

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Annexure A

CENTRAL POLLUTION CONTROL BOARD
DELHI- 110 032

List of Participants

Sl. No	Name	Designation and Organization	Member of the Committee / Invitee
1.	Dr. Anil K Saxena	Former Director, National Productivity Council, Delhi	Chairman
2.	Dr. A K Swar	Former Chief Environmental Engineer, State Pollution Control Board, Odisha	Member
3.	Dr. Sandeep Kumar Dixit,	Assistant Professor, Department of Chemistry, S.S. (PG) College, Shahjahanpur, UP	Member
4.	Dr. Vinod K. Singh	Scientist E, Hazardous Substance Management Division, MOEF&CC, Delhi	Member
5.	Dr. Mahendra Patil	Chief Scientist & Head, Chemical and Hazardous Waste Management Division, CSIR-NEERI, Nagpur	Member
6.	Sh. D. M. Thaker	Unit Head, Hazardous Waste Cell, Gujarat Pollution Control Board, Gujarat	Member
7.	Sh. H. S. Malviya	Superintending Engineer and HSMD Coordinator, Madhya Pradesh Pollution Control Board	Member
8.	Dr. S. Selvan	Chief Environmental Engineer, Tamil Nadu Pollution Control Board	Member
9.	Sh. Shantanu Dutta	Member Secretary, Assam Pollution Control Board	Member
10.	Sh. B. Vinod Babu	Nodal Officer Waste Management, CPCB, Delhi	Member
11.	Sh. A. Sudhakar	Head, WM-II, CPCB, Delhi	Member
12.	Sh. Anil C Ranveer	Scientist E, WM-II Div., CPCB, Delhi	Member Convener
13.	Sh. Mohd Salik	SRF, WM-II Division, CPCB, Delhi	Invitee
14.	Sh. M. V. Srinivas	SRF,WM-II Division, CPCB, Delhi	Invitee

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Annexure B

Recommendation of the Expert Committee for approval of proposals under Rule 9 of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

Sl. No.	Name of the Industry	Hazardous Waste details	Product	Brief Process	Recommendations
1.	M/s Aarti Industries Ltd., Plot. No: L-5, L-8, L-9/1, MIDC Tarapur, Tal & Dist: Palghar, 401506 Maharashtra	Sulfolane is generated from the purification process of Crude KCl (generated from the manufacturing of Fluoro Nitro Benzenes). This sulfolane is categorized as hazardous waste under 28.1, Schedule I of HOWM Rules, 2016	Manufacturing of isomers of Fluoro Nitro Benzene	Crude KCl is fed into the reactor for the removal of moisture and then distilled for Sulfolane. Recovered Sulfolane is utilized in the manufacturing of Fluoro Nitro Benzenes. Isomers of Fluoro Nitrobenzene is manufactured by reaction of respective Chloro Nitro Benzene (CNB) with Potassium Fluoride (KF) in the presence of sulfolane as a solvent and Poly Ethylene Glycol (PEG) as a Catalyst.	The committee observed that both KF Solution and Sulfolane recovered from crude KCl solution generated in sister unit. Upon query the applicant mentioned that the sulfolane and KF solution were recently categorized as hazardous waste in authorization and applied under Rule 9 for utilization. The committee recommended for joint inspection of the unit by CPCB and Maharashtra PCB to verify the source of generation, utilization process with monitoring. The report shall be placed in the subsequent TEC.
		KF Solution is generated from the purification process of Crude KCl where Crude KCl is generated from the manufacturing of Fluoro Nitro Benzenes. This KF Solution is categorized as hazardous waste under 28.1, Schedule I of HOWM Rules, 2016		KF solution recovered from crude KCl is fed into a Spray dryer for removal of moisture content and KF powder is generated. Spray dryer duct is connected to venturi scrubber along with Scrubbing media as water. This scrubbing water is again recycled in a Spray dryer.	
2.	M/s. Aarti Industries	Spent HCl generated during Chlorination of Phenol and	Nitroso Uracil/ Theophylline/	1. **NITROSO URACIL**	Upon deliberation, the committee observed that Spent HCl may possess the constituents like Para Chloro

Sl. No.	Name of the Industry	Hazardous Waste details	Product	Brief Process	Recommendations
	Limited, Plot No. K-17/18/19, MIDC Tarapur, Boisar, Tal./Dist. Palghar, Maharashtra	Nitro Toluene (while manufacturing of Para Chloro Phenol and Ortho Chloro Para Nitro Toluene respectively) Spent HCl is categorized as hazardous waste under B-15 (Inorganic acids), Schedule II of HOWM Rules, 2016	Sodium Theophylline	Cyano acetic acid and other raw materials processed to generate 6-imino-1,3-dimethyl dihydro pyrimidine-2,4(1H,3H)-dione (CADMU) 48% caustic lye solution is added to the reaction mass then heated and maintained. Reaction mass is cooled and sodium nitrite is added followed by the addition of hydrochloric acid, maintained, cooled, filtered and washed with process water to get a slurry of Nitroso Uracil compound. 2. **THEOPHYLLINE** Slurry of the above Nitroso uracil compound dissolved in water is treated with, formic acid and using Pd/C as a catalyst to provide Amine Solution (1,3-dimethyl 4,5-diamino uracil). Amine solution is treated with zinc dust and hydrose in presence of formic acid and maintained then caustic lye solution is added and maintained. Then add hydrochloride acid and sodium hydrosulphite maintained and filtered to get theophylline crude (wet).	Phenol, Ortho Chloro Para Nitro Toluene and other chemicals based on the source of generation of Spent HCl. These chemicals majorly end in the MEE. Therefore, monitoring of MEE salts has emphasized. The TEC recommended for trial run with the following monitoring parameters & conditions: i. Hazardous waste (i.e., Spent HCl) to be analysed for moisture content, pH, purity, TOC, COD, Chlorides, Free Chlorine, Organic impurities (Phenol, Para Chloro Phenol, Nitro Toluene, Ortho Chloro Para Nitro Toluene, Toluene), Cyanide, Heavy Metals [Chromium (Cr), Mercury (Hg), Lead (Pb), Arsenic (As)] ii. Salts/sludges (Such as MEE salt etc) formed with and without Spent HCl utilization shall be analysed for pH, Calorific value, Loss on drying, Loss on ignition, Chlorides, Sulphide, respective phenolic compounds, Toluene, and leaching concentrations of, Cyanide, Cr, Pb, As, Hg. iii. Waste water generated and treated effluent during utilization for pH, purity, TOC, COD, Chlorides, Sulphides (as S), Phosphate (as P), Organic impurities (Phenol, Para Chloro Phenol, Nitro Toluene, Ortho Chloro Para Nitro Toluene, Toluene), Cyanide, Heavy Metals (Cr, Pb, As, Hg). iv. Products generated (Nitroso Uracil/ Theophylline/

Sl. No.	Name of the Industry	Hazardous Waste details	Product	Brief Process	Recommendations
				3. **SODIUM THEOPHYLLINE** The above said Amine solution is treated with zinc dust and sodium hydrosulphite in presence of formic acid and maintained then caustic lye solution is added and again maintained. After maintaining sodium chloride is added and the reaction mass is cooled, filtered to provide wet Sodium Theophylline	Sodium Theophylline) with and without hazardous waste utilization shall be analysed for Chlorides, Loss on drying, Loss on ignition, organic contents (Phenol, Para Chloro Phenol, Nitro Toluene, Ortho Chloro Para Nitro Toluene, Toluene) and leaching concentrations of Chromium, Mercury, Lead, Arsenic, Cyanide. v. Work zone Emission shall be monitored for PM_{10}, Chlorobenzene, Nitrobenzene, Phenol, Nitrotoluene (all isomers), VOC and HCl Mist. vi. Source Emission shall be monitored for Particulate matter, HCl Mist, TOC and Chlorine. vii. The inspecting team shall verify and assess the working of MEE. Identify the load/variation in the MEE salt with and without utilizing Spent HCl and report the same.
3.	M/s J S Minechem Lakkadwas, Tehsil Girwa, Udaipur, Rajasthan	Spent sulphuric acid is generated from dye & dye intermediates, pesticides, drugs and chemicals manufacturing industries are categorized as hazardous waste as Category 26.3, 29.6 of Schedule I and Sl. No. 15 (Inorganic Acids) of Note (7) in Schedule II of HOWM Rules, 2016	Di-calcium phosphate	Animal feed grade di-calcium phosphate is commercially produced by several processes. Prior art in this field mainly relates to acidulating rock phosphate with mineral acids such as sulphuric to produce phosphoric acid which is then neutralized with calcium hydroxide or carbonate for producing DCP. Sulphuric acid is the preferred mineral acid to be used for the	The committee observed that spent sulphuric acid proposed for utilization is generated from various sources such as dye & dye intermediates, pesticide, drugs and chemicals manufacturing industries. However, the unit has analysed only a few parameters in hazardous waste. Actual contaminants from all sources are required to be analysed. Contaminants shall also be analysed in product as it is proposed for animal feed grade Di-calcium Phosphate. The committee recommended that upon receipt of a complete assay report of hazardous waste (spent

Sl. No.	Name of the Industry	Hazardous Waste details	Product	Brief Process	Recommendations
				treatment of rock phosphate and the acid produced in this reaction is phosphoric acid which is subsequently converted or hydrated lime after the removal of fluorine. The crude dilute Phosphoric acid solution of the acidulation process is collected in a tank. This contains dilute H_3PO_4 Solution with H_2SiF_6. This solution is concentrated in an evaporator for removing H_2SiF_6, which is scrubbed in water in scrubbing system and then it is mixed with lime stone for further purification & then filtered. The filtered solution of purified conc. Phosphoric acid is diluted and neutralized with neutralizing solutions to pH 4.5 to pH 7.2 to precipitate Calcium Phosphate. This precipitate is washed with water if required. The wet cake of Calcium Phosphate from centrifuge/filter press is dried and pulverized, if required then blended and sieved/packed for sale	sulphuric acid) generated from all sources the trial run may be permitted to unit with the following conditions: i. Hazardous waste to be analysed for Strength of H_2SO_4, Nitric acid, COD, BOD, VOC, TOC, Fe, Mg, Chlorobenzene, Chloronitro benzene, toluene, etc. ii. Product to be analysed for Moisture, Calcium (as Ca), Phosphorus (as P), Fluorine (as F), Acid insoluble ash, Lead (as Pb), Arsenic (as As_2O_3) Total ash, Presence of proteinous/organic impurities, Other Heavy Metals, TOCs, VOCs. iii. Work zone emission shall be monitored for PM_{10}, Acid (H_2SO_4) mist, VOC and Fluoride. iv. Source emission shall be monitored for PM, SO_x, NO_X, Total F, HF and TOCs.
4.	M/s. Shri Mahavir Ferro Alloys Pvt.	Blast Furnace Flue dust (BF flue dust) is generated as a	Iron ore pellet	Iron ore fines are charged into the ball mill and made in to iron ore	Upon deliberation, the committee observed that the utilization of BF dust is a well-established process and

Sl. No.	Name of the Industry	Hazardous Waste details	Product	Brief Process	Recommendations
	Ltd, Kalunga Industrial Estate, Odisha	result of cleaning of the blast furnace top gas. This BF Flue dust is categorized as hazardous waste under – 35.1, Schedule I of HOWM Rules, 2016		cake. The iron cake, BF flue dust, bentonite and coke are mixed proportionally. This mixture was converted to green pellets. The green pellets of the desired size are subjected to thermal treatment viz. drying, preheating, induration and cooling. Grate Rotary Kiln dry the pellets out in a drying section, then bring the pellets up to the desired temperature in a preheat zone, then finish the induration process. The pellets are then cooled with the help of an Annular Cooler. They are hardened in a counter flow manner in rotary kiln and are air cooled in an annular cooling system in the circular cooler. The sized pellets are conveyed to product bins for dispatch. The over size and the undersized are again crushed and reuse in pellet making. ESP attached in the process.	trial runs have been carried out for captive utilization in industries in Odisha. However, there is no case for utilization off site. The case was to utilize in another unit in the same premises. The committee also observed that Blast Furnace flue dust is very fine in comparison with iron ore. As the applicant proposed to utilize the BF flue dust and iron ore in a 20:80 ratio therefore the efficiency of the existing ESP may vary with different parameters of BF flue dust (i.e., size of particle, resistivity, etc). The TEC recommended for the trial run with the following conditions: i. Hazardous waste (i.e., Blast Furnace Flue dust) to be analysed for Moisture content, Carbon content, particle size distribution, resistivity of dust, Sulphur, Calorific value, iron content, and Total & leaching concentrations of Heavy metals (i.e., Lead, Zinc, Tin, Cadmium, Arsenic, Mercury, Chromium, Cobalt, Nickel, Copper, Vanadium, Antimony, Manganese). ii. Product (i.e., Iron ore pellet) generated with and without hazardous waste utilization shall be analysed for Moisture content, Carbon content, Sulphur, Calorific value, iron content, and Total & leaching concentrations of Heavy metals (i.e., Lead, Zinc, Tin, Cadmium, Arsenic, Mercury, Chromium, Cobalt, Nickel, Copper, Vanadium,

Sl. No.	Name of the Industry	Hazardous Waste details	Product	Brief Process	Recommendations
					Antimony, Manganese) iii. Work zone Emissions shall be monitored for PM_{10}, CO, SO_2, NO_X, Pb, Zn, Mn and Ni. iv. Source Emission shall be monitored for Particulate matter, SO_2, NO_X and CO. v. The unit shall get verified the working efficiency of the ESP and the parameters such as Size of particle, resistivity, etc. that influence the efficiency while utilizing BF Flue dust by design engineers from reputed organization. The design engineers team shall verify that whether existing ESP is capable to meet the prescribed emission standard to handle BF Flue dust utilization with iron ore, if not shall prescribe necessary modifications. The unit shall submit this complete report to the inspecting team during trial run.
5.	M/s S.R.F. Ltd, Jhiwana, Rajasthan	Hydro Fluoro Silicic acid is generated during the manufacturing of Hydro Fluoric acid, which is categorized as hazardous waste under C2, Schedule II of HOWM Rules, 2016	Potassium Fluoride	Hydro Fluoro Silicic acid reacts with KF+KCL solution in the reactor which generates Potassium Fluorosilicate, dilute Hydrochloric Acid, dilute Hydrofluoric acid by reaction. The reaction mass is transferred to a centrifuge and spin-dried. Potassium Fluorosilicate is filtered as cake and dilute Hydrofluoric acid and dilute Hydrochloric Acid as filtrate.	Upon deliberation, the committee observed that Spent HFSA generated during the manufacturing of HF acid and also generated from the fertilizer industry may be utilized if the proponent is willing to do and then subsequent trial run shall be carried out with both types of HFSA (i.e., from Hydro Fluoric acid and from fertilizer industry). The TEC recommended for trial run with the following conditions: i. Hazardous waste (i.e., Hydro Fluoro Silicic acid)

Sl. No.	Name of the Industry	Hazardous Waste details	Product	Brief Process	Recommendations
				For Wet Potassium Fluorosilicate cake, Water and Caustic Potash Lye (KOH 48%) were added in the Reactor. Further reaction mass is filtered to KF solution and silica cake. Hydro Fluoric acid and KOH are added to KF solution for precipitating the silica and pH adjustment. KF solution is dried to moisture content of 0.5% powder and removed water is recycled.	to be analysed for Moisture content, pH, TOC, Strength of acid, Chlorides, Sulphates, HF, H_2SO_4, leaching concentrations of Fluoride, Lead and Chromium. ii. Sludges generated with and without Spent HFSA utilization shall be analysed for pH, Calorific value, Loss on drying, Loss on ignition, Chlorides, Sulphide, Silica, Silicates, Leaching concentration of fluoride, Lead and Chromium. iii. Products (KF Solution and KF powder) generated with and without hazardous waste utilization shall be analysed for Moisture content, pH, TOC, Chlorides, Sulphates, HF, H_2SO_4, leaching concentrations of Fluoride, Lead and Chromium. iv. Work zone Emission shall be monitored for PM_{10}, HCl mist, H_2SO_4, HF, Silica, Sulfur hexafluoride, Chlorine and Fluorides (as F). v. Source Emission shall be monitored for Particulate matter, HCl mist, H_2SO_4, HF, Total Organic Carbon (TOC), Chlorine and Total Fluoride.
6.	M/s. Sri Varu Industries, Plot No. B-53, Plot No. B-53, 10th cross, Industrial Estate,	Spent Etchant (generated from Printed Circuit Boards and Copper etching industry) and ETP Sludge are categorized as hazardous waste under 12.7 and 35.3 respectively of	Recovery of copper	ETP Sludge is pre-treated with HCL. Spent Etchant is added to the reactor. Ammonia solution is added slowly to a reactor with continuous stirring until the desired pH is reached. Scrap iron is added to the reactor. The	Upon deliberation, the committee observed that the utilizer has already obtained authorization dated 07/09/2020. However, applied under Rule 9 of HOWM Rules, 2016 to obtain SoP as per the condition mentioned their CTO dated 12/08/2020.

Sl. No.	Name of the Industry	Hazardous Waste details	Product	Brief Process	Recommendations
	Nelmangala, Karnataka	Schedule I of HOWM Rules, 2016		reaction is carried out until precipitation takes place and then allowed for settling within reactor. Ammonical fumes liberated during the process is scrubbed. The supernatant liquor (Containing Ammonium Sulphate) is transferred to a storage tank while the slurry containing Copper along with residual mother liquor is taken for recovery. The slurry precipitate at this stage washed with water and then transferred to sun drying for about 2.5-3 hours followed by magnetic separation of Iron from the copper. The supernatant liquid from the reactor and bleed water from scrubber are treated in an Effluent Treatment Plant (ETP)	However, during the presentation the unit has not presented the analysis of hazardous waste. Therefore, the committee recommended to submit all the details to CPCB. The case was deferred for the next TEC meeting with all the details.

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