

Central Pollution Control Board
Waste Management - II Division, Delhi

Sub: Minutes of the 22nd meeting of the Technical Expert Committee organized virtually through mail for “Evaluation of proposal for utilization of the hazardous and other wastes under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016”.

1. 22nd meeting of Technical Expert Committee (TEC) for “Evaluation of proposals received from the various industries for utilization of the hazardous and other wastes under Rule 9 of Hazardous and Other Wastes (Management and Transboundary Movement) (HOWM) Rules, 2016” was organized virtually through mail in the first week of January, 2021.
2. The committee members were requested to provide their comments on 02 draft Standard Operating Procedures (SoPs), 05 proposals for revision in existing SoPs and 03 draft trial run protocols under Rule 9 of HOWM Rules, 2016, vide mail dated 06.01.2021. List of committee members requested to provide their comments is enclosed at Annexure A.
3. The committee members provided their suggestions and feedbacks through mail.
4. The details of the 02 Draft SoPs along with the recommendations are as below:

Sl. No.	Details of the Draft SoP	TEC Recommendation
1.	SoP for Utilization of Magnesium Chloride Salts Generated from DEMP (Diethyl Methyl Phosphonite reaction) in the MAP (Magnesium Ammonium Phosphate) Process in Effluent Treatment.	SoP prepared should confine only for the process for which trial run has been conducted i.e. CETP only. Thus, SoP prepared should be considered only for specific Magnesium Chloride generated during the Diethyl methyl phosphonite (DEMP) reaction process, while manufacturing Glufosinate. In view of above, the committee recommended that after incorporating above suggestions, SoP shall be finalized.
2.	SoP for Utilization of Brine Sludge (generated from Caustic Soda Unit) for manufacturing of bricks	Upon detailed examination, the committee recommended for SoP finalization.

5. The details of the 05 proposals for revision in existing SoPs along with the recommendations are as below:

Sl. No.	Details of the SoP	TEC Recommendation
1.	Revision of existing SoP for “Utilization of spent alkali/acidic bromide generated during	The applicant was called for virtual meeting on 19.01.2021 to discuss the said matter. After detail discussion, the committee recommended that

	<p>manufacturing of various pesticides, pharma and organic chemicals for recovery of liquid bromine” (for incorporation of Solar Evaporator instead of MEE/AOP/RO); representation of M/s Shanro Key Chem Ind. Pvt. Ltd., Gujarat</p>	<p>unit shall submit analysis report of final effluent proposed for solar evaporation including parameters such as TDS, COD, Free Bromine, etc. and possible contaminant of pesticide industry for further consideration in subsequent TEC.</p>
2.	<p>Revision of existing SoP for “Utilization of Hydro Fluoro Silicic Acid generated from Single Super Phosphate Fertilizer Industries”, (utilization of Hydro Fluoro Silicic Acid through recycled back in SSP plant process) as per representation received from M/s Rama Phosphate Ltd., Madhya Pradesh</p>	<p>Upon detailed examination, the committee suggested that recycling back (in-house recycling) of Hydro Fluoro Silicic Acid in SSP plant process should be encouraged. The committee acknowledged that several new SSP manufacturing plants have already granted Environment Clearance with proposed feature incorporated. Also, the Technical EIA Guidance Manual of "Chemical Fertilizers" sector developed by IL&FS Ecosmart Ltd Hyderabad for Ministry of Environment & Forests, Government of India also describes types of process and pollution control technologies, operational aspects of EIA with model TOR of that Sector, wherein it states that:</p> <p><i>“Hydrofluorosilicic acid produced in phosphoric acid and SSP plant is reused for acidulation of rock phosphate. As a result, sulphuric acid is saved, besides utilization of hydrofluorosilicic acid. In some of the plants hydrofluorosilicic acid is converted to AlF₃, cryolite/fluoride chemicals.”</i></p> <p>In view of the above committee recommended that the proposal of the unit w.r.t. in-house recycling of Hydro Fluoro Silicic Acid in SSP plant process may be considered. However, the product quality of SSP should not be compromised.</p>
3.	<p>Revision of existing SoP for “Utilization of empty contaminated/barrels/containers/drums contaminated with hazardous wastes/chemicals/oil/lubricants” (for incorporation of all types of contaminated drums) as per representation received</p>	<p>Upon detailed examination, the committee suggested that in absence of coverage of different types of industries in the existing SoP, huge number of contaminated containers /drums are being accumulated inside the factory premises or disposed through un-authorized links.</p> <p>Therefore, to regulate this sector and streamline the scientific disposal through authorized recyclers, all types of empty contaminated drums/containers/ barrels from</p>

	from M/s Eco Resource Solutions, Odisha.	<p>all industrial and other sources should be covered in the SoP since the cleaning procedure of the drums/containers is commonly use techniques like washing with hot water/ washing with caustic soda solution and hot water/ steaming/chemical washing etc. followed by drying/ painting and leveling.</p> <p>In view of above, committee recommended to include all type of containers / drums except pesticides industry.</p>
4.	Revision of existing SoP for "Utilization of spent solvent for recovery of solvent" (for removal of VOC absorption media and TOC analysers) as per representation received from Bulk Drug Manufacturers association of India, Hyderabad	<p>Upon detailed examination, the committee observed that the requirement of VOC absorption media at vent of the condenser cannot be dispensed as there are requirements of VOC emission control at vents.</p> <p>However, as submitted by the applicant the sublimation of charcoal adsorbent as hard lump, which could be in the case the adsorbent media not replaced periodically, may close the vent and leads to pressurization. This may be categorized as the maintenance issue and should be dealt by the respective unit.</p> <p>It was also suggested that in place of activated charcoal, different zeolite based or polymer based adsorbent media can be utilized for VOC adsorption from vent gases.</p> <p>However, in case of amending checklist, installation of TOC analyser can be considered. TOC analyser may be replaced with Regular VOC monitoring with portable VOC meter at primary and secondary vent condensers and online fixed VOC detector connected to data logger to be provided by the concerned unit.</p> <p>In view of above committee recommended that it is necessary to provide VOC absorption media including all safety measures and alarm systems. However, TOC analyser condition may be amended in the existing SoP for "Utilization of spent solvent for recovery of solvent" by incorporating regular VOC monitoring with portable VOC meter at primary and secondary vent condensers and/or online fixed VOC detector connected to data logger.</p>
5.	Revision of existing SoP "Utilization of APCD Dust / Residue generated from LD Furnace/Electric Arc Furnace (EAF)/Blast Furnace of Steel	<p>Upon detailed examination, the committee observed that Cold briquetting of residues of LD Furnaces and other Furnaces of Steel Plant has become viable. However, there is huge accumulation of LD sludge inside the Steel Plant premises and disposal has become a serious issue. The proposed process is drying the agglomerates by use</p>

	<p>Plant/captive Blast Furnace and Ferro Alloy Plant for producing cold briquettes for use in Blast Furnace for production of Pig Iron” for addition of heating process, as per representation received from M/s Passery Minerals Ltd., Odisha.</p>	<p>of hot air at 110°C in the kiln is only the process modification and could be agreed upon.</p> <p>A condition may be stipulated to provide Cyclone/Wet Scrubber at the Kiln used for heating of the residues/agglomerates before flue gas is vented through chimney to meet the norms of PM upto 100 mg/m³.</p> <p>In view of above, committee recommended that proposed modification by the unit may be considered for amendment in existing SoP, after assessment of the emissions during trial run with proposed utilization process.</p> <p>The committee recommended for trial run. The trial run protocol will be finalized in subsequent TEC.</p>
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6. The details of the 03 draft trial run protocols along with the recommendations are given in *Annexure-B*.



**CENTRAL POLLUTION CONTROL BOARD
DELHI- 110 032**

List of Participants

Sl. No	Name	Designation and Organization	Member of the Committee / Invitee
1.	Dr. R.K. Singh	Retired Scientist 'F', Bureau of Indian Standard, New Delhi	Chairman
2.	Dr. C.S. Sharma	Ex. Additional Director, CPCB, Delhi	Member
3.	Prof. Rajeev Gupta	Department of Chemistry, University of Delhi, Delhi	Member
4.	Prof. Kamal Kishore Pant	Department of Chemical Engineering, IIT Delhi	Member
5.	Dr. A K Swar	Chief Environmental Engineer, State Pollution Control Board, Odisha	Member
6.	Sh. D. M. Thaker	Unit Head, Hazardous Waste Cell, Gujarat Pollution Control Board, Gandhi Nagar, Gujarat	Member
7.	Sh. B. Vinod Babu	Additional Director & Head, WM-I, CPCB, Delhi	Member
8.	Sh. Dinabandhu Gouda	Additional Director & Head, IPC-I, CPCB, Delhi	Member
9.	Sh Abhey Singh Soni	Additional Director & Head, WM-II, CPCB, Delhi	Member Convener
10.	Sh Anil C Ranveer	Additional Director, WM-II Div, CPCB, Delhi	Invitee
11.	Sh. Mohd Salik	SRF, WM-II Division, CPCB, Delhi	Invitee
12.	Sh. M. V. Srinivas	JRF, WM-II Division, CPCB, Delhi	Invitee



**Recommendation of the Technical 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	HW as Raw Material	Product	Brief Process	Recommendations
1.	M/s. Bharat Forge Ltd, Sr. No. 72/76, Mundhwa, Taluka- Haveli, Dist- Pune, Maharashtra - 411036	Chemical Sludge (Graphite Based) is generated from waste water treatment unit of Forging Industry hazardous waste category - 35.3, Schedule I of Hazardous & other Wastes (Management and Transboundary Movement) Rules, 2016.	Manufacturing of forging lubricant	The dry sludge powder received from the ETP treatment to be fed along with other feed raw material at required ratio to dry ball mill for size reduction which is a batch process. The mixed material is fed to the agitator where a solution of water and chemicals were already prepared, manually and finally to make the slurry. Slurry from agitator fed to the wet ball mill for further size reduction and mixing. Slurry is weighed and filled in the barrel which is to be utilised as a lubricant in the forging process.	The committee recommended trial run permission may be granted with following conditions: <ul style="list-style-type: none"> i. Hazardous waste (i.e. Chemical Sludge (Graphite Based)) shall be analysed for Heavy metals Arsenic, Barium, Cadmium, Chromium (III), Lead, Manganese, Mercury, Selenium, Silver, Ammonia, Cyanide, Nitrate (as nitrate-nitrogen), Sulphide (as H₂S), Antimony, Beryllium, Chromium (VI), Cobalt, Copper, Molybdenum, Nickel, Thallium, Vanadium, Zinc, Total Petroleum Hydrocarbons (TPH) ii. Product (Lubricant) manufactured with utilisation of Chemical Sludge (Graphite Based) shall be analysed for Heavy metals Arsenic, Barium, Cadmium, Chromium (III), Lead, Manganese, Mercury, Selenium, Silver, Ammonia, Cyanide, Nitrate (as nitrate-nitrogen), Sulphide (as H₂S), Antimony, Beryllium, Chromium (VI), Cobalt, Copper, Molybdenum, Nickel, Thallium, Vanadium, Zinc, Total Petroleum Hydrocarbons (TPH). iii. Fugitive emission shall be monitored for PM₁₀ and Graphite. iv. Source emission shall be monitored for PM at Ball mill.
2.	M/s Ardent	Linz-Donawitz (L.D.) Sludge is generated as	L.D sludge as	Iron Ore fines charged into the ball mill and made in to cake. The iron ore cake, LD	The committee recommended trial run permission may be granted with following conditions:

Sl. No.	Name of the Industry	HW as Raw Material	Product	Brief Process	Recommendations
	Steel Limited, Plot no. 208, Jamuhota, New colony, Near NH-6, Mining road, Keonjhar, Odisha – 758001	a result of cleaning the off gases during steel making process categorized as hazardous waste under – 35.1, Schedule I of HOWM Rules, 2016	an additional raw material along with iron ore in the manufacturing of iron ore in the existing pellet plant	Sludge, bentonite, limestone & coke are properly mixed. The ground iron ore fines/concentrate along with additives and binder are converted to green pellets after thorough mixing. Green balls are produced by disc Pelletizer and transferred to the green ball screening and distribution system. The green balls are first dried and preheated on the grate by gases discharged from the rotary kiln & circular cooler. They are hardened in a counter flow manner in rotary kiln and are air cooled in an annular cooling system in circular cooler. The hardened and cooled pellets will be conveyed to vibrating screen for screening over size (+16 mm) & under size (-6 mm). These over & under size pellets are again crushed to fines & reuse in making pellets. The size pellets (6 to 16 mm) are conveyed to product bins for dispatch.	<ul style="list-style-type: none"> i. Hazardous waste (i.e. L.D. Sludge) shall be analysed for Moisture content, Carbon content, Sulphur and Heavy metals (i.e., Lead, Zinc, Tin, Cadmium, Arsenic, Mercury, Chromium, Cobalt, Nickel, Copper, Vanadium, Antimony, Manganese and iron). ii. Product (i.e. Iron ore pellet) manufactured with utilisation of (i.e. L.D. Sludge) shall be analysed for Moisture content, Carbon content, Sulphur and Heavy metals (i.e., Lead, Zinc, Tin, Cadmium, Arsenic, Mercury, Chromium, Cobalt, Nickel, Copper, Vanadium, Antimony, Manganese and iron). iii. Fugitive emission shall be monitored for PM₁₀, CO, SO₂, NO_x, Pb and Ni. iv. Source emission shall be monitored for Particulate matter, SO₂, NO_x and CO at APCD in utilization area.
3.	M/s Aarti Industries Ltd, Plot No- k-17/18/19, MIDC, Tarapur, Boisar, 0.3 Tal/ Dist. Palghar – 401506,	Caffeine Mother Liquor is generated in Pharmaceutical industry during manufacturing of caffeine categorized as hazardous waste under – 28.1, Schedule I of HOWM Rules, 2016	Recovery of caffeine.	Sodium Theophylline is reacted with Dimethyl sulphate in alkaline condition, after the reaction completed caffeine crude has generated which undergoes filtration. Caffeine has sent from filtration for purification and bagged as product. The mother liquor from filtration is extracted with chloroform. The raffinate is the mother liquor containing caffeine less than 0.5%. This raffinate is hazardous waste (Caffeine Mother Liquor). The applicant proposed to	<p>The committee recommended trial run permission may be granted with following conditions:</p> <ul style="list-style-type: none"> i. Hazardous waste (i.e. Caffeine Mother Liquor) shall be analysed for Moisture content, Caffeine content, Sodium Sulphate, Methanol, Chloroform and Heavy Metals (i.e., Arsenic, lead). ii. Product (i.e. Caffeine) manufactured with utilisation of Hazardous waste (i.e. Caffeine Mother Liquor) shall be analysed for Moisture content, Caffeine content, Sodium Sulphate,

Sl. No.	Name of the Industry	HW as Raw Material	Product	Brief Process	Recommendations
	Maharashtra			<p>collect the raffinate i.e., mother liquor containing caffeine less than 0.5% to mix with mother liquor generated from filtration unit. Then this undergoes extraction with chloroform. Again the extract is caffeine and filtered as product after distillation. The raffinate is the mother liquor sent for MEE. Condensate from MEE is treated in RO plant and permeate is used in utility section. The product Caffeine is generally utilized as an intermediate component in pharmaceutical industry and also utilized in beverage industries.</p>	<p>Methanol, Chloroform and Heavy Metals (i.e., Arsenic, lead).</p> <p>iii. Fugitive emission shall be monitored for PM₁₀ and Chloroform.</p> <p>iv. Source emission shall be monitored for Particulate matter and VOC.</p>

