

Waste Management - II Division  
Central Pollution Control Board, Delhi

**Sub: Minutes of the 41st 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. The 41<sup>st</sup> 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 on 28.10.2024 by CPCB, Delhi through hybrid mode.
2. Ms. Deepti Kapil, Additional Director (WM-II Division, CPCB, Delhi) and Member Convener (TEC), welcomed the Chairman and members of the committee and apprised the agenda of the meeting to TEC. The list of the participants is enclosed at *Annexure A*.
3. Based on the trial study report, the draft Standard Operating Procedures (SoPs) & Checklist of Minimal Requisite facilities for utilization of hazardous waste prepared by WM-II Division, CPCB, were discussed by the committee. Recommendations of the committee on the draft SOP are tabulated below:

S. no.	SOP	Recommendations
1.	SoP for utilization of spent Sodium Nitrite Solution and spent Nitric Acid (generated from oxidation and nitration reactions of organic chemicals) in manufacturing of Sodium Nitrate for end use in manufacturing of dyes, pigments, bangles, metal industry, firecracker industry & glass industry.	<p>GPCB along with the applicant has presented the details of a trial run conducted at M/s M J Fine Chem, Ankleshwar for utilization of spent Sodium Nitrite Solution and spent Nitric Acid (generated from oxidation and nitration reactions of organic chemicals) in manufacturing of Sodium Nitrate.</p> <p>The committee observed the following:</p> <ol style="list-style-type: none"> <li>i. In the draft SOP submitted by GPCB, the generic sources of hazardous wastes are mentioned such as spent sodium nitrite solution from the oxidation process &amp; spent nitric acid from the nitration process of organic chemicals. However, as per trial run report the spent sodium nitrite solution is generated (from oxidation process) during production of para chlorobenzoic acid and spent nitric acid is generated (from nitration process) during production of 3-Nitro-4-Chloro Benzoic acid. These benzoic acid derivatives are dye &amp; dye intermediates.</li> <li>ii. TOC was not reported in trial findings. The unit also explained that the generator is pretreating the HW at their end therefore, hence TOC was found absent.</li> <li>iii. The mother liquor being proposed for reuse back into the</li> </ol>

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S. no.	SOP	Recommendations
		<p>utilization process.</p> <p>iv. The utilization process is divided in three stages in draft SoP where Sodium Nitrate is manufactured by (i) using spent sodium nitrite solution and spent nitric acid (ii) reusing mother liquor back in the process and (iii) using scrubber bleed from alkali scrubber along with spent nitric acid for production of various grades of sodiumnitrate.</p> <p>v. The end uses of sodium nitrate were in manufacturing of dyes, pigments, potassium nitrate, glass industry, bangles, metal industry and firecracker industries based on grades of the product recovered.</p> <p>vi. The high level of PM<sub>10</sub> is observed in the work zone exceeding the prescribed limit but PM in source monitoring was within prescribed limit. Acid mist monitored in the work zone exceeded the prescribed limit but in source monitoring found within prescribed limit. Upon query, the unit was unable to explain the characteristic of acid mist monitored.</p> <p>vii. There is no ETP available within the premises of the utilizer however, as per consent condition unit is maintaining ZLD.</p> <p>The committee recommended incorporation of the following in draft SOP for utilization of (i) spent Sodium Nitrite Solution generated from oxidation process during production of parachloro benzoic acid and (ii) spent Nitric Acid generated from nitration process (where H<sub>2</sub>SO<sub>4</sub> is not used) during production of organic chemicals, for manufacturing of Sodium Nitrate for specific industrial end use.</p> <p>i. The proposed three stages of utilization process shall be substituted in single process using spent sodium nitrite solution and spent nitric acid along with provision of reusing mother liquor from the centrifuge and scrubber bleed from alkali scrubber back in the process.</p> <p>ii. The unit shall receive spent NaNO<sub>2</sub> from only those generators, having pre-treatment units such as activated carbon filter to bring TOC levels up to BDL prior sending the waste to utilizer. The utilizer shall also make necessary provisions by installing activated carbon or any suitable filter for pre-treatment to reduce TOC in case of any</p>



S. no.	SOP	Recommendations
		<p>deviations.</p> <p>iii. The end uses of sodium nitrate produced shall be permitted for industrial uses only such as manufacturing of dyes, pigments, bangles, metal industry, firecracker industry &amp; glass industry and shall not be permitted for food, fertilizer and pharma production.</p> <p>The committee further suggested submission of following:</p> <p>i. For generalization of the source spent nitric acid generated from the nitration process (where H<sub>2</sub>SO<sub>4</sub> is not used) of various organic chemical manufacturing industries, GPCB along with the unit shall provide range specific results of various organic chemicals industries where nitration processes occur.</p> <p>ii. GPCB may allow the unit to utilize the waste for 3-4 days to assess the gaps identified by a joint team of officials from CPCB and GPCB with limited sampling. The measures taken if any to improve the process conditions may be highlighted.</p> <p>iii. The unit shall submit complete assay report of spent NaNO<sub>2</sub> including TOC through NABL accredited laboratory.</p> <p>iv. The unit may be allowed by GPCB to utilize the waste for 3-4 days to carry out work zone monitoring in the presence of GPCB/CPCB team. The report shall be submitted specifying method adopted in detail.</p> <p>The committee recommended the matter to be discussed in the subsequent TEC upon receipt of the above information from the unit and GPCB.</p>



S. no.	SOP	Recommendations
2.	SoP for utilization of ETP Sludge (generated from pickling activity) in manufacturing of Ferrous Sulphate(M/s PrakriyaMetals & Chemicals,Gujarat)	<p>The draft SOP was discussed in 35th TEC meeting wherein following were requested from the unit and GPCB:</p> <ol style="list-style-type: none"> <li>a. Unit shall submit a report to GPCB on the reactions involved in said utilization process along with the mass balance of all heavy metals present.</li> <li>b. Unit to work upon the number of cycles that can be allowed prior to final disposal in view of the building up of the contaminants in the mother liquor. Also the unit shall propose adequate treatment of exhausted mother liquor to maximize the possible number of recycling of the mother liquor and final exhausted mother liquor to be disposed of as per the consent condition. The final proposal of the unit shall be verified by GPCB and shall also carry out sampling and monitoring to establish the unit's proposal. The report shall then be put forth before the committee.</li> </ol> <p>The committee observed the following:</p> <ol style="list-style-type: none"> <li>1. The reaction details with mass balance have been provided by the unit.</li> <li>2. The unit wanted to extract more metals from the discarded sludge. But to ensure no building up of contaminants, after 6 cycles the mother liquor to be sent to ETP (where currently lime treatment is available at the facility).</li> <li>3. GPCB has informed verification of the unit's proposal, sampling and monitoring as suggested in 35th TEC is yet to be carried out by the Board.</li> </ol> <p>Upon deliberation, the committee suggested for following:</p> <ol style="list-style-type: none"> <li>1. The provision for recycling of Mother Liquor up to 06 batches and final treatment of Mother Liquor in ETP be verified by GPCB.</li> <li>2. The report on monitoring and verification of the unit proposal by GPCB is required as per the 35th TEC recommendation w.r.t to the mother liquor recycling capacity and adequacy of ETP along with sampling &amp; monitoring of the same.</li> </ol> <p>The committee recommended for further deliberation of the matter upon receipt of aforesaid report from GPCB.</p>



S. no.	SOP	Recommendations
3.	SoP for utilization of Spent Calcium Chloride powder [Generated from manufacturing of Triethyl Phosphite (TEP) and Trimethyl Phosphite (TMP)] in manufacturing of Pigment (M/s Dipen Industries, Gujarat)	<p>The draft SOP was discussed in 33rd TEC meeting wherein following were requested to be submitted by GPCB:</p> <ul style="list-style-type: none"> <li>a. GPCB may establish the details on availability of end users for utilization of Spent Calcium Chloride, and their downstream uses.</li> <li>b. GPCB may closely monitor the generation &amp; Utilization scenario of Spent Calcium Chloride. If required, they may conduct a study through a third party agency to monitor the situation.</li> </ul> <p>In this regard, GPCB informed the committee that aforesaid study may need rigorous monitoring and time as these aspects require a separate study which involves market dynamics and requested this shall not be included in the process of finalization of the SOP.</p> <p>Upon deliberation, the committee suggested following:</p> <ul style="list-style-type: none"> <li>i. The SoP may be finalized for utilization of “Spent Calcium Chloride powder [Generated from manufacturing of Triethyl Phosphite (TEP) and Trimethyl Phosphite (TMP)] in manufacturing of Pigment”.</li> <li>ii. Further, the unit shall submit a report biannually w.r.t. the details on end users for utilization of Spent Calcium Chloride, and their downstream uses to SPCB and SPCB to closely monitor the generation &amp; utilization scenario of Spent Calcium Chloride till the period of 02 years from publication of aforesaid SoP.</li> <li>iii. Accordingly, based on SPCB reports, the SOP may be updated w.r.t. information on availability of downstream users, end uses etc.</li> </ul> <p>The committee recommended finalization of the SoP with above suggestions.</p>



S. no.	SOP	Recommendations
4.	Utilization of Spent Hydrochloric Acid (generated from organic chemical manufacturing sector) in the manufacturing of Ossein and Gelatine (M/s India Gelatin & Chemicals Ltd., Gujarat)	<p>The draft SOP received from GPCB was discussed in the 33rd TEC meeting wherein the committee observed the end use of gelatin in the food and pharma sector wherein the following were suggested:</p> <p>a. The products manufactured utilizing hazardous waste that has end use in human food and animal fodder may require approval from Food Safety and Standards Authority of India (FSSAI). And the pharmaceutical products manufactured by utilizing hazardous waste require permission from the regulatory authority i.e., Indian Pharmacopoeia Commission/ Central Drugs Standard Control Organization.</p> <p>b. The source of Spent HCl needs to be specific to the utilization process studied during the trial run.</p> <p>Now, the committee observed that:</p> <ol style="list-style-type: none"> <li>1. The unit had submitted a certificate from FSSAI, mentioning that the quality of gelatin produced utilizing spent HCl has shown no adverse effect in comparison to quality of gelatin produced using fresh HCl.</li> <li>2. Further, the unit has clarified that Ossein is an intermediate product from which only gelatin can be produced; it has no other uses. Also, neither ossein or gelatin is used for animal fodder.</li> <li>3. The unit has also submitted another certificate from Food &amp; Drug Control Administration, Valsad certifying that the gelatin of various pharma grades have been manufacturing by the unit utilizing spent HCl, which were duly inspected by them and found satisfactory as the quality of gelatin remains unchanged regardless of virgin HCl or spent HCl.</li> <li>4. GPCB informed that unit while submitting the application included 04 sources of Spent Hydrochloric Acid (i.e., during manufacturing of Mono Chloro Acetic Acid, Chloro Benzene, Chloro Paraffin Wax and Trifluoroacetic acid). In this regard, based on the analysis report submitted for the said 04 sources, a trial run was conducted for the worst case scenario (Chlorobenzene having the highest TOC compared to rest).</li> </ol>



S. no.	SOP	Recommendations
		<p>M/s India Gelatin &amp; Chemicals Ltd., Gujarat is a large unit which can maintain standard quality however there may be other utilizers who may not maintain the same quality hence to ensure safe quality of gelatin, specific source for spent HCl shall be maintained as per trial study in the SOP.</p> <p>The committee suggested that:</p> <ol style="list-style-type: none"> <li>1. The SoP shall be finalized for the “Utilization of Spent Hydrochloric Acid (generated during manufacturing of manufacturing of Mono Chloro Acetic Acid, Chloro Benzene, Chloro Paraffin Wax and Trifluoroacetic acid) in the manufacturing of Ossein and subsequently Gelatine from such ossein”.</li> <li>2. If the unit intended to utilize spent HCl from other sources, upon successful demonstration of trial study, the other sources of spent HCl may be appended in the SOP through amendment.</li> </ol> <p>The committee recommended finalization of SOP as per above suggestions.</p>
5.	Utilization of process biomass sludge (generated from fermentation process in pharma industry) for manufacturing of Organic manure (Mix NPK Fertilizer) (M/s Gujarat Krushi Bio Fertilizer, Gujarat)	<p>The trial run findings and long term study results conducted for the said utilization were discussed in 31st and 36th TEC meetings wherein the committee suggested the following:</p> <ol style="list-style-type: none"> <li>a. Unit shall submit analysis of biomass sludge; Justification/explanation for advantages of using nicotine powder as raw material; and pH and electrical conductivity of the soil utilized for long-term study.</li> <li>b. GPCB &amp; CPCB to formulate the SoP and forward the draft SoPs along with trial study and long term study reports to DoF/ DoA for further evaluation and concurrence.</li> </ol> <p>As per suggestions, the unit has submitted the details as suggested by the Committee.</p> <p>CPCB circulated a draft SoP for “Utilization of Process biomass sludge (generated from fermentation process during production of Lovastatin) for the manufacturing of Organic manure (Mix NPK fertilizer)” to GPCB for finalization before sending to DoF/ DoA to obtain concurrence. However, GPCB has requested considering all fermentation processes of the pharmaceutical sector as source of Process Biomass sludge (hazardous waste) for</p>

S. no.	SOP	Recommendations
		<p>utilization in the preparation of generic SoP instead of source as “during manufacturing of lovastatin” (for which trial run and long term studies were conducted).</p> <p>In this regard, the details submitted by the unit and the matter regarding the finalization on the source of Process Biomass sludge are deliberated in this meeting.</p> <p>Upon deliberation the committee observed the following:</p> <ol style="list-style-type: none"> <li>i. W.r.t analysis of biomass sludge heavy metals are reported under the limits Schedule II of HOWM Rules, 2016 and concentration of lovastatin &amp; toluene were not found in biomass sludge.</li> <li>ii. W.r.t justification/explanation for advantages of using nicotine powder (another raw material in utilization process) the unit has submitted that it aids through in recycle of essential nutrients such as nitrogen (N), phosphorous (P) and potassium (K) back into the soil; microorganism movement in soil which further increases the porosity of the soil; increase the infiltration of the oxygen; increases the pH of the soil, maintain the electrical conductivity (EC) and others.</li> <li>iii. pH and electrical conductivity of the soil utilized for long-term study were non-significantly affected, so there was no adverse effect of any treatments on soil.</li> <li>iv. GPCB suggested to generalise the source of “Process Biomass Sludge” as “all fermentation processes of the pharmaceutical sector” for which the unit had made the application to GPCB.</li> <li>v. The committee noted that a trial run was conducted using biomass sludge derived from the source "During the manufacturing of Lovastatin," and that long-term studies have also been completed with this biomass sludge. Consequently, a comprehensive assessment has been established for this source. However, biomass from other fermentation sources may contain diverse microorganisms, which could pose potential risks to plant or animal life, or development of antibiotic resistance, or other adverse effects, which needs to be assessed before permitting for utilization.</li> <li>vi. For generic SOP using biomass sludge from the</li> </ol>





S. no.	SOP	Recommendations
		<p>fermentation process, advice may be taken from institutes such as Indian Institute of Integrative, Centre for Cellular &amp; Molecular Biology (CCMB), etc.</p> <p>The committee accordingly suggested that:</p> <ol style="list-style-type: none"> <li>1. Draft SoP prepared for “Utilization of Process biomass sludge (generated from fermentation process during production of Lovastatin) for the manufacturing of Organic manure (Mix NPK fertilizer)” shall be forwarded to Department of Fertilizer/ Agriculture along with trial run and long term study report for concurrence on the SoP.</li> <li>2. The category of Process biomass sludge may be specified as 28.1 of Schedule I of HOWM Rules, 2016 in the SoP.</li> <li>3. A condition of inactivating the microbial activity in the process biomass sludge prior to procuring for manufacturing of NPK fertilizer, through providing chemical treatment/ heat treatment etc at the generator’s end shall be stipulated in the SoP.</li> <li>4. Utilization of Process biomass sludge shall not exceed 20 % of total raw material on dry basis.</li> <li>5. Further if the unit intended to utilize Process biomass sludge (generated from fermentation process in pharmaceutical Industry) in manufacturing of organic manure (Mix NPK fertilizer); and as the production stage trial study has been carried out and it involves only a composting process, so the unit may submit complete details on each sources w.r.t fermentation process from which Process biomass sludge generated, types of culture/ micro-organisms used, material balance, sterilization process for biomass sludge, analysis of sludge w.r.t heavy metals, relevant organic compounds (utilized in process) in accordance with Schedule II of HOWM Rules, 2016 &amp; count of micro-organisms and their activity etc to CPCB. The submitted details may be deliberated in subsequent TEC meeting and if required CPCB may invite experts from bio-molecular research organizations such as CSIR-CCMB.</li> </ol>



S. no.	SOP	Recommendations
		The committee recommended i.) finalising the SoP with incorporating above conditions for “Utilization of Process biomass sludge (generated from fermentation process during production of Lovastatin) for the manufacturing of Organic manure (Mix NPK fertilizer)” for forwarding to DoF/DoA to obtain concurrence on draft SoP and ii.) For other fermentation (Pharmaceutical) sources of Process Biomass sludge, if the unit intended to utilize then it may submit details as mentioned above to CPCB for further deliberation in subsequent TEC.

4. The proposals for (i) amendment in SOP for spent acetic acid in manufacturing of acetic anhydride, and (ii) amendment in existing SoP#28 for Utilization of spent alumina generated from polymerization in swing unit of petrochemical plant (M/s Chirag fuels, Gujarat) were discussed and recommendations were given below:

S. no.	Applications	Recommendations
1.	Amendment in existing SOP for utilization of spent acetic acid in manufacturing of acetic acid/ acetic anhydride	<p>The proposal of M/s Jinesh Industries regarding utilization of spent acetic acid in manufacturing of acetic acid was discussed in 37<sup>th</sup> TEC meeting wherein the committee suggested that the unit (Jinesh Industries) to submit the complete proposal/application on Rule 9 portal, however no such proposal has been received from the unit so far.</p> <p>GPCB has submitted that as per unit’s revised proposal, it has an extraction system followed by distillation to recover acetic acid from spent acetic acid which may fall in the first/intermediate stage (i.e. recovery of acetic acid) of existing SOP no. 63 for “Utilization of Dilute Acetic Acid (generated from Pharmaceutical/ Pesticide/ Chemical Sector) as resource material for manufacturing of Acetic Anhydride or Glacial Acetic Acid”.</p> <p>GPCB suggested to amend the aforesaid SOP as recommended in earlier TEC into 2 sections: (a) Utilization of Spent Acetic Acid for recovery of acetic acid and (b) Utilization of Spent Acetic Acid for manufacturing of acetic anhydride, without trial study.</p> <p>Upon deliberation, the committee agree to the proposal of GPCB and suggested the following:</p> <p>i. As recommended in 37<sup>th</sup> TEC, the utilization process of existing SOP 63 may be divided into 2 stages (a. utilization of spent acetic acid for</p>



		<p>recovery of acetic acid and b. utilization of spent acetic acid/ recovered acetic acid for manufacturing of acetic anhydride.</p> <p>ii. The category B-15 (inorganic acid) shall be replaced by Category 28.1 -Process Residue and wastes (Schedule-I of HOWM Rules, 2016) and C2 –Corrosive (Schedule-II of HOWM Rules, 2016) in the type of hazardous waste.</p> <p>iii. Products shall be (a) recovered acetic acid and (b) acetic anhydride.</p> <p>iv. The revised utilization processes shall be depicted along with a process flow diagram.</p> <p>v. Conditions w.r.t. handling, transportation, storage of hazardous waste, intermediate product &amp; final product and Checklist shall be incorporated accordingly.</p> <p>Accordingly, this committee recommends that CPCB may revise existing SOP 63 by including the above suggestion for “Utilization of spent Acetic Acid (generated from Pharmaceutical/ Pesticide sector) as resource material for recovery of acetic acid and manufacturing of Acetic Anhydride”.</p>
2.	<p>Amendment in existing SoP (#28) for Utilization of spent alumina generated from polymerization in swing unit of petrochemical plant (M/s <b>Chirag fuels</b>, Gujarat)</p>	<p>The matter was discussed in 33rd TEC meeting wherein the committee suggested following:</p> <p>i. GPCB to forward the complete proposal with the recommendations on the need for amendment of existing SoP by CPCB.</p> <p>In this regard, the unit has presented a complete proposal before the committee and GPCB has further submitted that the existing SOP (#28) may be amended as the unit has proposed to send the calcined alumina for manufacturing of insulation bricks, high alumina bricks and high alumina refractory binder i.e the same end uses and source of HW as prescribed in existing SOPs.</p> <p>The committee observed that:</p> <ol style="list-style-type: none"> <li>1. The proposal is to remove moisture and calcine spent Alumina at 900-1000 degree centigrade.</li> <li>2. As prescribed in prescribed in existing SOP, the unit shall have ESP and/or bag filters as APCDs</li> <li>3. The Calcined spent Alumina can be sent to the brick manufacturing plants only as per existing SOP. No other uses shall be practiced.</li> </ol> <p>Upon deliberation, the committee suggested that:</p> <ol style="list-style-type: none"> <li>1. The utilization process of existing SOP (#28) may be divided into 2 stages [<b>a.</b> spent alumina generated (from polymerization in swing unit of petrochemical plant) for recovery of calcined alumina and <b>b.</b> utilization of spent/calcined alumina (generated</li> </ol>

from polymerization in swing unit of petrochemical plant) for manufacturing of insulation bricks, high alumina bricks and high alumina refractory binder. Both the products to be recovered as per the utilization process mentioned in the SoP respectively.

2. The revised utilization processes shall be depicted along with a process flow diagram.
3. Provisions w.r.t. handling, transportation, storage of hazardous waste, intermediate product & final product and Checklist shall be incorporated accordingly.

The committee recommended revision of existing SOP (#28) including additional product (calcined alumina) may be done by CPCB as per above suggestions,

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5. The following applicants were requested to make a technical presentation:
- i. M/s Alset Enterprises Private Limited, Plot no. 33, 1206 to L2I0, Khatian 3203, 3204, Baneshwarpur, JL 127 , Sirakol, Falta, 24 Parganas
  - ii. M/s Shiv Silica Pvt. Ltd., Plot No. 6212, GIDC Industrial Estate, Ankleshwar
  - iii. M/s Nise Pharma Chem Pvt. Ltd. Plot No.B 9/4, MIDC, Mahad, Tel -Mahad, District-Raigad, Maharashtra
  - iv. M/s Hindustan Chemical Corporation, Plot no- 3/18, 19 & 20, GIDC Sarigam-396 155, Tal- Umbergaon, Dist- Valsad- Sarigam
  - v. M/s Ferric Alum Industries, Plot no. 2807/1, GIDC Estate, Ankleshwar -393002, Dist. Bharuch, Gujarat
6. The details of the proposals along with the recommendations of the committee are given in **Annexure-B**.
7. M/s Shiv Silica, M/s Hindustan Chemical Corporation and M/s Ferric Alum Industries informed again that due to their engagement in personal work or some management related issues they are not able to participate in the meeting. The committee observed that these applicants were invited in previous TEC meetings; however, they have not participated due to the same reason and therefore, the Committee recommended the matters to be disposed of.
8. The meeting ended with a vote of thanks to the chair.

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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.	Sh. Niraj A. Shah	Unit Head, Hazardous Waste Cell,, GPCB	Member
3.	Dr. Shantanu Kumar Dutta	Member Secretary, PCB Assam	Member
4.	Sh. P. C. Rauta	Additional Chief Environment Engineer, State Pollution Control Board, Odisha	Member
5.	Ms. Vijay Laxmi	Additional Chief Environment Engineer, Tamil Nadu Pollution Control Board	Member
6.	Sh. Vinay Ramaiya	Sub Engineer, Madhya Pradesh Pollution Control Board	Member
7.	Dr. S. K. Goyal	Chief Scientist & Head, CSIR-NEERI, Delhi	Member
8.	Dr. Sandeep Kumar Dixit	Assistant Professor, Department of Chemistry, S.S. (PG) College, Shahjahanpur, UP	Member
9.	Sh. B. Vinod Babu	Head, WM-II Div., CPCB, Delhi	Member
10.	Ms. Deepti Kapil	Additional Director, WM-II Div., CPCB, Delhi	Member Convener
11.	Ms. Sarah M. Syed	Assistant Environmental Engineer, Gujarat Pollution Control Board	Invitee
12.	Sh. Saurav Gairola	Scientist B, WM-II Div, CPCB, Delhi	Invitee
13.	Ms. Komal Prasad	Scientist B, WM-II Div, CPCB, Delhi	Invitee
14.	Sh. M. V. Srinivas	SRF, WM-II Division, CPCB, Delhi	Invitee
15.	Sh. Mohd. Salik	SRF, WM-II Division, CPCB, Delhi	Invitee

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Recommendation of TEC for proposals under Rule 9 of HOWM Rules, 2016.

S. No.	Name of the unit	Hazardous Waste details	Product	Brief Process	Recommendations
1.	M/s Alset Enterprises Private Limited, Plot no. 33, 1206 to L2I0, Khatian 3203, 3204, Baneshwarpur, JL 127, Sirakol, Falta, 24 Parganas, West Bengal	Spent pot lining (i.e carbon a refractory generated from primary Aluminium Smelters is categorized as hazardous wastes under Category 11.2 of Schedule - I of HOWM Rules 2016	Carbonfuel and Mineralizer	Spent pot lining (SPL) 1 <sup>st</sup> cut & SPL 2nd cut is loaded mechanically, for crushing and screening to size up to 25 mm. It is further mixed with 1 percent calcined Dolomite fines (size up to 1 mm). Retention period given is 24 Hrs. Within this duration all the leachable fluorides react with the Dolomite and forms a stable non leachable compound. Further the raw mix is given heat treatment in Ribbon Blender at the temperature of 500 degrees C in oxidizing condition. Heat treatment breakdowns the CN bond of Cyanide. The non-hazardous products obtained, are screened to two different sizes i.e., Size (1 to 25)mm and Size up to 1 mm. The final product is to be sold as Carbon Product and/ or	<p>The unit has presented the proposal in 39th TEC wherein the committee suggested following:</p> <ol style="list-style-type: none"> <li>The applicant shall submit ultimate and proximate analysis of SPL 1st and 2nd cut including CNHS and calorific value.</li> <li>The applicant shall submit a process flow diagram and material balance per batch with peak capacity of the plant.</li> <li>The applicant shall submit details of APCD for control of emission released during treatment of SPL 1st cut and 2nd cut.</li> </ol> <p>The unit presented the details and the matter has been deliberated.</p> <p>The committee observed that the unit has submitted above details except CNHS characteristics of SPL 1st and 2nd cut. Further, the unit also informed that:</p> <ol style="list-style-type: none"> <li>It has obtained consent for proposed material balance with batch capacity 40 MT of SPL per day.</li> <li>The end use of SPL 1 derived carbon fuel shall be in high temperature applications such as steel industry.</li> </ol>

				<p>Mineralizer to Steel, Cement &amp; Ferro alloys industries.</p>	<p>iii. The end use of mineraliser derived from SPL 2 shall be in the cement manufacturing industries.</p> <p>The committee suggested that the unit shall submit CNHS characteristic of SPL 1st &amp; 2nd cut and also the details of crusher and screens.</p> <p>Accordingly, the committee recommended for trial utilization of SPL 1st &amp; 2nd cut (generated from primary aluminium smelters) for production of carbon fuel and mineralizer, at production facility with the following conditions:</p> <ol style="list-style-type: none"> <li>i. Hazardous waste (SPL 1st &amp; 2nd cut) &amp; Products (carbon fuel &amp; mineraliser) to be analysed for CNHS, calorific value, ash content, LoI, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub>, Na, F, CN, Heavy metals (Zn, Pb, Hg) as per Schedule- II of HOWM Rules, 2016.</li> <li>ii. Work zone emissions shall be monitored for PM, Ammonia, Fluoride and CN.</li> <li>iii. Source emissions shall be monitored for PM, SO<sub>x</sub>, NO<sub>x</sub>, Ammonia, Total Fluoride, HF, HCN.</li> <li>iv. The team shall clearly elaborate the chemistry breaking down cyanide and removal of leachable fluoride.</li> <li>v. The inspection team shall closely monitor and recommend end uses of products derived utilizing SPL 1st &amp; 2nd cut.</li> </ol>
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S. no.	Name of the unit	Hazardous Waste details	Product	Brief Process	Recommendations
2.	M/s Nise Pharma Chem Pvt. Ltd. Plot No.B 9/4, MIDC, Mahad, Tel - Mahad, District- Raigad, Maharashtra	<p>i. Spent Sodium acetate solution (generated during manufacturing of Camphor; and 4-Terpineol)</p> <p>ii. Spent Ammonium sulphate solution (generated during manufacturing of Citronellyl nitrile product; and from Alpha/ Beta Cyclocitral)</p> <p>iii. Spent Phosphoric acid (generated during manufacturing of Alpha-Ionone; amma Methyl Ionone; Normal Methyl Ionone; &amp; Timber Touch/Timber forte)</p>	<p>Sodium acetate trihydrate Ammonium Sulphate Ammonium phosphate compounds proposed in 33rd TEC and withdrawn.</p> <p>Now proposed to manufacture Tri Sodium Phosphate</p>	<p>Sodium Acetate solution (25-30%) is given carbon treatment with fresh charcoal, followed by evaporation through distillation and crystallization to make the Sodium Acetate trihydrate salt.</p> <p>Proposed end uses of recovered Sodium Acetate is in Textile as Mordant, Dyes as filler, Leather chemicals liquor reprocessed.</p>	<p>The unit has presented the proposal with the details sought in the earlier 32nd TEC meeting.</p> <p>Upon deliberation Committee observed the following:</p> <ol style="list-style-type: none"> <li>1.) The unit has proposed for 03 different hazardous wastes (Spent Sodium acetate; Spent Ammonium sulphate; &amp; Spent Phosphoric acid) utilization proposals.</li> <li>2.) Of the 03 proposals; 02 proposals (Utilization of Spent Sodium acetate &amp; Spent Ammonium sulphate) involve a physical change process without chemical reaction involving unit operations such as charcoal treatment, distillation and evaporation.</li> <li>3.) The 3rd proposal (i.e., utilization of Spent Phosphoric acid) involves chemical process in manufacturing a new product (Trisodium Phosphate whereas earlier proposed for Ammonium phosphate and the same been withdrawn).</li> </ol> <p>Upon deliberation, the committee recommended the</p>

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Proposed end uses of recovered Ammonium Sulphate is in Dyes & Intermediate company for dilution purposes for Descaling of Boiler, Clay Industry removal of Iron particles

following:

- 1) A trial study shall be conducted for Spent Phosphoric acid (generated during manufacturing of Alpha-Ionone; Gamma Methyl Ionone; Normal Methyl Ionone; & Timber Touch/Timber forte) in the manufacturing of Tri Sodium Phosphate for 07 days with the following conditions:
  - A. Hazardous waste, Intermediates & Products to be analysed for pH, purity, TOC, moisture content, cyanide, & Heavy metals (Ni, Cr, Pb, Hg, Mn, Zn, & Cu) as per Schedule-II of HOWM Rules, 2016.
  - B. Influent/ mother liquor and treated wastewater to be analysed for pH, BOD, COD, Oil & grease content, Phenolic Compounds, Sulphide (as S), Zinc, Iron, Copper, Total Chromium, Manganese, Nickel, Arsenic, Cyanide, Vanadium, Lead, Selenium, Cadmium, and Mercury.
  - C. Work zone Emissions shall be monitored for Phosphoric acid, and Sodium Hydroxide.
  - D. Source Emissions (if any) shall be monitored for Acid mist (Phosphoric acid), and TOC.
- 2) The inspecting team while conducting the above said trial run shall review and assess the the remaining 02 proposals (i.e., utilization of Spent

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Sodium acetate & Spent Ammonium sulphate) w.r.t environmentally safe utilization and if necessary shall monitor the relevant emissions, effluents and residues as a part of the above said trial study.

- 3) The trial run findings and utilization processes assessment report shall be deliberated in subsequent TEC for preparation of SoPs.

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*MDS*