

**Central Pollution Control Board**

**WM - II Division, Delhi**

**Sub: Minutes of the Ninth Meeting of the Technical Expert Committee for "Evaluation of proposal for utilization of the hazardous and other wastes under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016".**

1. Ninth meeting of the Technical Expert Committee on "Evaluation of proposal for utilization of the hazardous and other wastes under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016" was held at CPCB, Delhi on 07.11.2017. List of the participants is enclosed at **Annexure A**.
2. Shri Bharat K Sharma, Additional Director & Divisional Head, WM-II, welcomed the members and invitees of the Committee. The following 04 draft Standard Operating Procedures (SoPs) & Check list of Minimal Requisite facilities for utilization of hazardous waste, prepared by WM-II Div., CPCB, based on trial study conducted in accordance with the trial run monitoring protocol, were reviewed by TEC. Recommendations of the TEC are as below:

Sr. No.	Agenda	TEC Recommendations
1	Standard Operating Procedure (SoP) for Utilization of Used/ Waste Thinner in manufacturing of primer to be used in automotive paints	SoP & Checklist of Minimal Requisite Facilities for the said utilization of Used/Waste Thinner generated from Paint shops of automobile industries for manufacturing Primer, as recommended by TEC after incorporating suggestions, is given at <b><u>Annexure - I</u></b> .
2.	Standard Operating Procedure (SoP) for Utilization of Spent Pot Lining for recovery of Fuel grade carbon	<p>The committee discussed the report of trial run monitoring conducted jointly by CPCB and Odisha SPCB during September 22-23, 2017 pertaining to utilization of Spent Pot Lining for recovery of Fuel grade at M/s Subhra Chemicals Pvt. Ltd., Room No. 77, 1<sup>st</sup> Floor, O.M.P, Market Complex, Cuttack – 753 003, Odisha. The analysis results of the joint inspection report reveals that:</p> <ol style="list-style-type: none"><li>i. The product (fuel grade carbon or its briquette) manufactured by utilizing SPL has leachable concentration of fluoride as high as 681 mg/l and 375 mg/l. Limit of the same prescribed under the Schedule II of the HOWM Rules, 2016, is 180 mg/l. Therefore, it exhibits characteristics of the product as hazardous even after treatment of SPL.</li><li>ii. Fluoride in waste water samples (generated from reaction vessel) at various storage/settling tanks has been reported as 37-2560 mg/l. Further, Cyanide in the reaction vessel supernatant waste water has been reported as 10 and 11.5 mg/l.</li></ol> <p>The above results reveal that the utilization process is not efficient in removing leachable fluoride and cyanide from SPL. Other non-compliances w.r.t. stack emission and work zone emission and other deficiencies in plant &amp; machineries have also been reported in the joint inspection report.</p>

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		In view of the above, the committee rejects the said utilization proposal.
4	Standard Operating Procedure (SoP) for Utilization of Spent Pot Lining (SPL) generated from Primary Aluminum Industry for energy recovery in boiler.	<p>The committee observed that the trial study was conducted for utilisation of SPL @0.05% &amp; 0.1% of coal (by weight) by mixing with lime in the ratio of 1:1 (SPL: Lime) in its captive power plant boiler at M/s Hindalco Industries Ltd, Hirakund, Odisha. However, the leachable concentration of fluoride in the flyash has not been carried out during the said trial study which requires to be ascertained for its impact, if any, on the environment.</p> <p>In view of above, the committee recommended that the proponent may be permitted for further trial study for three months. During which, the CPCB and SPCB shall collect the samples and analyze the following:</p> <ol style="list-style-type: none"> <li>a) Samples of flyash and bottom ash for analysis w.r.t total and leachable fluoride concentration with feed ratio of 1 : 1 of SPL and Lime</li> <li>b) At feed ratio of 1:2 of SPL and Lime, sampling and analyses shall be carried out for SPL (total &amp; leachable fluoride concentration); Source emission (PM &amp; HF) and flysh &amp; bottom ash (total &amp; leachable fluoride concentration).</li> </ol> <p>Both the studies shall be carried out during utilisation of 0.1% of SPL alongwith coal in the boiler. The findings of the above studies shall be placed in the next meeting.</p>
5	Standard Operating Procedure (SoP) for Utilization of Waste dichromate solution generated during manufacturing of Ibuprofen to produce Basic Chromium Sulphate	<p>The committee observed that the trial study conducted for the said utilisation has complied with all the parameters except for Manganese in one of the sample of source emission. However, the source of Manganese could not be found as the same is not present in the hazardous waste (Waste Dichromate solution) and the entire process of utilisation.</p> <p>Thus, the committee recommended the SoP &amp; Checklist of Minimal Requisite Facilities for utilization of Waste dichromate solution generated during manufacturing of Ibuprofen to produce Basic Chromium Sulphate, The same after incorporating suggestions of TEC, is given at <b>Annexure – II</b>.</p>

3. The following applicants as referred below were asked to make technical presentation before the committee:

- (i) M/s Hi-tech Metafluxes, Plot no. 354, Sector-C, Industrial Area, Urla, Raipur, Chattisgarh
- (ii) M/s The Green Environment Co-op, Service Society limited, Plot no. 244-251, Phase-2, GIDC Vatva, Ahmedabad, Gujarat-382445.
- (iii) M/s Shree kala Intermediates Pvt. Ltd. C-1B/124/3-4-5, GIDC, Nandesari, Vadodara, Gujara
- (iv) M/s Kiri Industries Ltd. Plot No. 299/1/A&B, 293/2, 265,366 GIDC Phase-II, Vatva, Ahmedabad-382445.
- (v) M/s Synergy Multichem Pvt. Ltd., works: 599-6008, village: Dudhwada, Taluka: Padra, Dist. Vadodara.

The applicant listed at (i), (ii), (iii) & (iv) made technical presentations before the committee. The representative of applicant listed at (v) was not present in the meeting.

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Officials of Waste Management-II Division, CPCB, presented the issues pertaining to M/s Chirpal Industries Limited, Plot No. 174-176, Sajipur- Gopalpur, Pirana Road, Piplej, Ahmedabad, Gujarat.

Details of the above proposals along with the recommendations of the committee on the above (i) to (v) proposals and M/s Chirpal Industries Limited, Plot No. 174-176, Sajipur- Gopalpur, Pirana Road, Piplej, Ahmedabad, Gujarat, are given in Annexure-III.

4. The meeting ended with vote of thanks to the chair.

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

**Date:** November 07, 2017

**Venue:** 2<sup>nd</sup> Floor, Conference Room,  
Parivesh Bhawan, CPCB, Delhi- 110 032

**Ninth Meeting of the Technical Expert Committee for "Evaluation of proposal for utilization of the hazardous and other wastes under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016**

**List of Participants**

S. No	Name	Designation and Organization	Member of the Committee / Invitee
1.	Dr R.K. Singh	Retired Scientist 'F', Bureau of Indian Standard.	Chairperson
2.	Prof. Rajeev Gupta	Dept. of Chemistry, University of Delhi	Invitee
3.	Shri D. M. Thaker	Environmental Engineer, Gujarat Pollution Control Board	Member
4.	Shri Dinabandu Gouda	Additional Director, PCI-I, CPCB, Delhi	Member
5.	Sh. B. Vinod Babu	Additional Director and Nodal Officer (Waste Management) and Head, WM-I Div, CPCB, Delhi	Member
6.	Sh. Bharat K Sharma	Additional Director & Head, WM-II Div, CPCB, Delhi	Member Convener
7.	Sh. Anupam Agnihotri	Director, JNARDDC, Nagpur - 23	Invitee
8.	Sh. Manoj T. Nimyi	Senior Principal Scientist, JNARDDC, Nagpur	Invitee
9.	Dr. Smita Agarwal	Scientist, CSIR-NEERI, Delhi	Invitee
10.	Dr. Snadhanjali Singh	Scientist, CSIR- NEERI, Delhi	Invitee
11.	Sh G K Ahuja	Scientist 'D', WM-II Div, CPCB, Delhi	Invitee
12.	Ms. P K Selvi	Scientist 'D', WM-II Div, CPCB, Delhi	Invitee
13.	Ms. Deepti Kapil	Scientist 'C', WM-II Div. CPCB, Delhi	Invitee
14.	Ms. Vineeta	Senior Scientific Assistant, WM-II Div, CPCB, Delhi	Invitee
15.	Ms. Neelma Saxena	Research Associate-I, WM-II Div., CPCB, Delhi	Invitee
16.	Ms. Rupali Gupta	Junior Research Fellow, WM-II Div, CPCB, Delhi	Invitee

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

S.N.	Name of the Industry	HW as Raw Material	Product	Process	Recommendations
1.	M/s Hi-tech Metafluxes, Plot no. 354, Sector-C, Industrial Area, Urla, Raipur, Chattisgarh.	Aluminium Dross & Flue gas dust (category: 11.4 and 11.5 of schedule I of HOWM Rules, 2016) generated from primary and secondary aluminium production	Al Mix, Metric Super, Slag treat, Teeming Powder, Casting Powder	The utilisation process involves pulverization of Aluminum dross to separate the main product i.e. Al-mix. The flue gas dust collected in the bag filters of pulveriser will be further used for manufacturing of various product(i.e Metric Super, Slag treat, Teeming Powder, Casting Powder) by mixing the same with other minerals such as dolomite, soda, silica, fluorspar, graphite etc while will be further use in Steel Industry.	<p>The committee observed that there is lack of technical information in the proposed utilisation proposal such as source of dross (primary or secondary smelting); constituents in raw material (i.e Aluminium dross); their mass balance after mixing with various minerals; process parameters and impact at end use of the product produced by using such dross.</p> <p>The committee therefore recommended that the proponent shall approach scientific institutes like IMMT, Regional Research Laboratory, Bhubneshwar; EMRI, Bhopal; JNARDDC, Nagpur etc. for preparing technical report on utilisation of Aluminum dross and its environment impact including Characterization of Aluminum dross w.r.t Aluminum, Nitrites, fluorides, silicon, phosphorus, alumina, vanadium, sodium, Al<sub>2</sub>O<sub>3</sub>, Chromium, Manganese, Arsenic, Cadmium, Cobalt, Copper, Nickel, Antimony and Thorium.</p> <p>The applicant agreed for the same and to submit the aforesaid report in three months.</p> <p>Upon receipt of above report, matter may be discussed in the subsequent meeting of the TEC in presence of the applicant.</p>
2.	M/s. The Green Environment Co-op, Service Society limited, Plot no. 244-251, Phase-2, GIDC Vatva, Ahmedabad, Gujarat-382445	Spent Aluminium Chloride (category: 26.1 of schedule I of HOWM Rules, 2016) generated during production of various Dyes and Dye Intermediates(C PC Green-7, Pigment Phthalocynine Green)	As a coagulant in Common Effluent Treatment Plant	The utilization process includes use of Spent aluminium chloride in place of Polyelectrolyte as a coagulant before secondary clarifier of the CETP.	<p>The committee has observed that the proponent is a CETP operator and Spent Aluminium Chloride is generated from few of its member units of CETP. The utilization proposal is to segregate and collect the Spent Aluminium Chloride and use in place of polyelectrolyte prior to the secondary clarifier (to aid secondary settling).</p> <p>Even if the said Spent Aluminium Chloride is not utilised as coagulant in CETP as proposed, it is going to CETP as inlet effluent.</p> <p>In view of above, the committee recommended that a trial study be conducted to assess the performance of CETP in terms of COD; Copper; TOC and other parameters as stipulated in the</p>

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S.N.	Name of the Industry	HW as Raw Material	Product	Process	Recommendations
					Consent to Operate. It was informed that Spent Aluminium chloride shall be used only after removal of copper (i.e not > 200 ppm) at source of generation and having COD not > 1000 ppm. The trial study is also to be verified with the use of conventional poly electrolyte and with the said use of Spent Aluminium Chloride.
3.	M/s Shree kala Intermediates Pvt. Ltd. C-1B/124/3-4-5, GIDC, Nandesari, Vadodara, Gujarat	Spent Aluminium chloride Solution (listed in S.No. 5, 10 & 12 at Item No. 7 under schedule II of HOWM Rules, 2016), generated during manufacturing of m-phenoxy benzaldehyde, acetal, brominated benzaldehyde indolinone, potassium Phenate and acetyl yara yara.	Poly Aluminium Chloride (PAC) proposed to be utilized in Effluent Treatment plant and paper manufacturing (sizing agent).	The utilization process involves mixing of aluminium chloride solution with alumina hydrate /aluminium powder and sodium hydroxide for 3 hrs. The reaction mixture is filtered to get PAC. Alumina reacts with residual HCl and generates $AlCl_3$ . The solid cake obtained during nitration is sent to NECL.	<p>The committee observed that the utilization process includes manufacturing of PAC from Spent Aluminium chloride generated from various sources of dye &amp; dye Intermediates, Pesticides, Phrama Industry (m-phenoxy benzaldehyde, acetal, brominated benzaldehyde, indolinone, potassium Phenate and acetyl yara yara). The TEC recommended to submit list of raw material/chemicals/by-products used in the hazardous waste (Spent Aluminium Chloride) generation process for each of the sources.</p> <p>Upon submission of the same, trial study be conducted which shall include the following;</p> <p>(i) Trial run be conducted for three days for utilization of Spent <math>AlCl_3</math> generated from three different sources of hazardous wastes (i.e Dye &amp; dye intermediates, Pesticides and Pharmaceuticals).</p> <p>(ii) Characteristics of Spent <math>AlCl_3</math>, product i.e. Poly Aluminium Chloride and filter press residue for the parameters pH, Mercury, Phenolic compounds (as <math>C_6H_5OH</math>) and with reference to specific parameters like;</p> <p>(a) <u>Dye &amp; dye intermediates:</u> Suspended Solids, heavy metals [Cr (VII), Total Cr, Cu, Zn, Ni, Cd], Cl, <math>SO_4</math>, Phenolic compounds (as <math>C_6H_5OH</math>).</p> <p>(b) <u>Pesticides:</u> TSS, BOD (3 days at 27 C), heavy metals (Cu, Mn, Zn, Hg, Tin (Sn), other metals like Ni etc.), inorganics (CN, As, <math>NO_3</math>, P), specific pesticides (Benzenl hexachloride,</p>

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Sl. No.	Name of the Industry	HW as Raw Material	Product	Process	Recommendations
					<p>carbonyl, DDT, Endosulfan, Diamethoate, Fenitrothion, Malathion, Phorate, Methyl parathion, Phenathoate, Pyrethrums, Copper Oxyghloride, Copper sulphate, Ziram, sulphur, paraquat, propronil, Nitrogen).</p> <p>(c) <u>Pharmaceuticals</u>: TSS, BOD (3 days at 27 C), Ar, Cr<sup>6+</sup>, Pb, CN, Sulphides as S, Phosphate as P</p> <p>(iii) The Spent AlCl<sub>3</sub> be analysed for organic contamination (in terms of TOC and COD) before and after passing through activated carbon.</p>
4.	M/s Kiri Industries Ltd. (Unit-I); Plot No. 299/1/A&B, 293/2, 265,366 GIDC Phase-II, Vatva, Ahmedabad-382445	Liquid Glauber Salt (category: 26.1 of schedule I of HOWM Rules, 2016) generated from the ethoxylation of para base vinyl sulphone manufacturing process.	Different reactive dyes in dye & dye intermediate industry	<p>Glauber salt is generated from Vinyl Sulphone manufacturing process (at Unit III of the facility).</p> <p>The utilization process involves diazotization of amine followed by cyanuration, coupling and condensation of the reaction mixture. The reacted mass is dried in spray dryer and the final products are packed.</p> <p>The utilization process proposes to utilize Glauber salt liquid (18.65 % purity) in the spray dryer instead of glauber salt powder (92 %) (in final product mixing), for manufacturing the product (different reactive dyes)</p>	<p>The committee recommends for trial run including the following;</p> <ol style="list-style-type: none"> <li>Analysis of hazardous waste w.r.t heavy metals (Pb, Cr, Cu, Ni, Zn etc.), COD &amp; TOC.</li> <li>Source emission in the stack attached to the spray dryer shall be monitored for (HCl vapour, acid mist, PM, TOC &amp; heavy metals.</li> <li>Fugitive emissions shall also be monitored for (acid mist, PM &amp; TOC) in the work zone area.</li> <li>Product analyses (produced by using both i.e. Glauber salt powder and Glauber salt in liquid form) w.r.t heavy metals (Pb, Cr, Cu, Ni, Zn etc.), COD &amp; TOC.</li> </ol>

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	Name of the Industry	HW as Raw Material	Product	Process	Recommendations
5.	M/s Chirpal Industries Limited, Plot No. 174-176, Sajipur-Gopalpur, Pirana Road, Piplej, Ahmedabad, Gujarat-382405	Spent Sulphuric Acid [Catagey-26.3 of Schedule I of HOWM Rules, 2016] generated during manufacturing of Torquoise Blue and Pigment Alpha Blue	As a neutraliser in Effluent treatment Plant	The utilization process involves use of Spent Sulphuric Acid as neutralizer in place of fresh acid in its Effluent Treatment Plant. The treated effluent will be discharge as inlet to CETP.	<p>The committee observed that the proposal has already been discussed in the fourth TEC meeting wherein the committee recommended for submission of concurrence of CETP operator for accepting its treated effluent when spent acid is used during trial study.</p> <p>However, the proponent has submitted the concurrence of CETP operator stating they are member of the CETP. Whereas, TEC recommended for accepting its treated effluent when spent acid is used during trial study.</p> <p>In view of above and after detailed deliberation, the committee recommended for submission of :</p> <ol style="list-style-type: none"> <li>1) Stoichiometric mass balance w.r.t Alkalinity, acidity and COD across each process units of it captive ETP.</li> <li>2) Characteristics of Spent sulphuric acid w.r.t its behavior as coagulating/flocculating agent.</li> </ol> <p>Upon receipt of the same, the matter may be discussed in the next meeting.</p>
4	M/s Synergy Multichem Pvt. Ltd., works: 599-6008, village: Dudhwada, Taluka:Padra, Dist Vadodara	Spent $AlCl_3$ (Cat. D2 under Sch-II of HOWM Rules, 2016)	Poly Aluminium Chloride is proposed to the used in water treatment plant and pulp & paper industry (sizing agent)	Aluminium Chloride is charged into the reactor and Alumina hydrate is slowly added by keeping stirrer on. Temperature is raised upto 160 C by providing steam then kept for 4-5 hrs. The reaction mixture is cooled down to 40-45 degree centigrade and the reacted mass is filtered through filter press. Earlier HCl was used in place of $AlCl_3$	The committee recommended that the proponent may be asked to make technical presentation in the next TEC meeting.

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