

Central Pollution Control Board
HWM Division, Delhi

Sub: Minutes of the Fifth 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. Fifth 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 15.02.2017. List of the participants is enclosed at **Annexure I**.
2. Shri Bharat K Sharma, Additional Director, HWMD, welcomed the members and invitees of the Committee. Thereafter, the following applicants as referred below were asked to make technical presentation before this committee;
 - (i) M/s. Super Chemical Industries, Plot No. 154, GIDC-Nandesari, Ta. : Nandesari, Dist.: Vadodara – 391340.
 - (ii) M/s PSV Poly Chem, Plot. No. 1706/2A, 1706/2B, 3rd phase, Notified Industrial Area, GIDC Vapi, Ta: Vapi, Dist: Valsad -396195.
 - (iii) M/s Shree Shubh Chemicals, Plot No. 6603, GIDC, Ankleshwar-393002, Dist: Bharuch
 - (iv) Maharani Innovative Paints Pvt. Ltd. 49TH KM, Main Mathura Road, Village Prithla, Tehsil & Distt. Palwal-121102 Haryana
 - (v) M/s Gayatri Industries, Plot No: 32 , Uma Ind. Estate, Vasana Lyava, Sanand Ahmedabad
 - (vi) M/s ShreeKala Intermediates p. Ltd., Plot NO. C-1B.124/3,4&5, G. I. D. C., Nandesari Vadodara
 - (vii) M/s Amrit Dye Chem Industries, Plot No. 268, 2nd Phase, Near Sadar Chawk, GIDC Vapi-396195, Dist-Valsad
 - (viii) J.J. Corporation, Plot No.-193/3, GIDC Estate, Vapi, Dist- Valsad - 369195
 - (ix) M/s Aims Chemical Industries, Plot No. 905/1, GIDC, Panoli, Tal & Dist: Bharuch-393002

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3. The applicants listed at (i), (iii), (iv), (v), (vi) and (viii) made technical presentations before the committee.
4. Applicants listed at (ii), (vii) and (ix) were not present in the meeting. However, the detailed utilization process of applications listed at (ii), (vii) and (ix) were presented by officials of Waste Management –II Div., CPCB. The details of the proposals along with the recommendations of the committee are given at Annexure – II.
5. The next meeting of the committee has been scheduled on 04.03.2017 (Saturday), tentatively.
6. The meeting ended with vote of thanks to the Chair.

— R. K. Singh

Annexure I

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

Date: February 15, 2017

Venue: 2nd Floor, Conference room, Parivesh Bhawan, CPCB, Delhi- 110 032

First Meeting of the Technical Expert Committee for "Evaluation of proposal for utilization of the hazardous and other wastes under Rule 9 of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

List of Participants

S. No	Name	Designation	Member of the Committee / Invitee
1.	Dr R.K. Singh	Retired Scientist 'F', Bureau of Indian Standard	Chairman
2.	Prof. Rajeev Gupta	Department of Chemistry, University of Delhi	Member
3.	Shri A.V. Shah	Environmental Engineer, Gujarat Pollution Control Board	Member
4.	Shri Paras Nath	Regional Officer, Ghaziabad, U.P. Pollution Control Board	Member
5.	Shri Dinabandu Gauda	Additional Director, PCI-I Div, CPCB, Delhi	Member
6.	Shri B Vinod Babu	Additional Director, HWMD, CPCB, Delhi	Member
7.	Shri Bharat K Sharma	Additional Director, HWMD, CPCB, Delhi	Member Convener
8.	Ms. P K Selvi	Scientist-C, HWMD, CPCB, Delhi	Invitee
9.	Dr. Sandeep Kumar Dixit	Research Associate, HWMD, CPCB, Delhi	Invitee

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Annexure II

Recommendation of the committee for utilization 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. Super Chemical Industries. Plot No. 154, GIDC-Nandesari, Ta. : Nandesari, Dist.: Vadodara – 391340.	Spent Ammonium Chloride (generated during manufacturing of Hexamethyldisilazane)	Ammonium Chloride	Process involves the neutralization of Spent Ammonium Chloride solution and filtration through drum filter. Filtrate is evaporated to remove excess water and transferred to crystallizer. After crystallization, crystals of Ammonium Chloride are centrifuged and dried. The mother liquor obtained from centrifuge and dryer is sent to evaporation vessel.	<p>The committee recommended that the unit shall submit complete assay of (i) Spent Ammonium Chloride Solution from each of the industrial processes from where Spent Ammonium is to be collected, and; (ii) product i.e. Ammonium Chloride manufactured by utilizing the above Ammonium Chloride.</p> <p>The assay report shall also include individual concentration of all raw materials/products (namly, Hexamethyl Disiloxane, Trimethyl Chloro Silane and Hexamethyl Silazane) and by-products/possible organic compounds utilized during generation of such Spent Ammonium Chloride.</p> <p>Upon receipt of the same trial run permission may be granted to M/s Super Chemical Industries as per trial monitoring protocol prepared by CPCB (given at Appendix A).</p>
2.	M/s PSV Poly Chem Plot. No. 1706/2A, 1706/2B, 3rd phase, Notified Industrial Area, GIDC Vapi, Ta: Vapi, Dist: Valsad -	Spent Sulphuric Acid (category: 26.3 of schedule I of HOWM Rules, 2016) generated during manufacturing of 2,5-Dichloro Para Nitro Aniline, 3,4-	Copper Sulphate, Ferrous Sulphate, Magnesium Sulphate and Zinc Sulphate and	Process involves slow addition of Sulphuric Acid in a reactor having solution of MgO/FeO/CuO/ZnO/Al ₂ O ₃ (for Magnesium Sulphate, Ferrous Sulphate, Copper Sulphate, Zinc	<p>The committee recommended that the industry shall submit following details:</p> <p>1. Complete assay of (i) spent Sulphuric Acid from each of the industrial processes from where Spent Sulphuric Acid is to be collected, and; (ii) products i.e. Copper Sulphate, Ferrous Sulphate, Magnesium Sulphate and Zinc Sulphate manufactured by utilizing the above spent Sulphuric acid.</p> <p>The assay report shall also include individual</p>

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S.N.	Name of the Industry	HW as Raw Material	Product	Process	Recommendations
	396195.	Dichloro Nitrobenzene, 5-Nitro Isophthalic Acid.	Aluminum Sulphate.	Sulphate and Aluminum Sulphate respectively). After 5-6 hours, crude mass is taken into filter pres for filtration. The filtrate obtained after filtration is crystallized and centrifuged to get final product. Mother liquor obtained during centrifuge and crystallization process is further used in next batch.	<p>concentration of all raw materials/products (such as 2,5-Dichloro Aniline 2,5-Dichloro Para Nitro Aniline, 3,4-Dichloro Benzene 3,4-Dichloro Nitrobenzene, Isophthalic Acid and 5-Nitro Isophthalic Acid) and by-products/possible organic compounds utilized during generation of such Spent Sulphuric Acid.</p> <p>2. Trial run permission may be granted to units as per trial run monitoring protocol prepared by CPCB (given at Appendix B) if TWA values of the above organic compounds in Spent Sulphuric acid is less than values give in their respective MSDS/ OSHA standard. If the values are higher than the said standard, the matter may be placed before TEC.</p> <p>3. The Copper Sulphate, Ferrous Sulphate, Magnesium Sulphate, Aluminum Sulphate and Zinc Sulphate so produced during the trial may be tested for eco-toxicity. In case, the same found non-toxic, standards of the said parameters may accordingly be prescribed in the spent Acid as well as Copper Sulphate, Ferrous Sulphate, Magnesium Sulphate, Aluminum Sulphate and Zinc Sulphate while developing SoP for the said utilization.</p> <p>4. Further, the products i.e. Copper Sulphate, Ferrous Sulphate, Magnesium Sulphate, Aluminum Sulphate and Zinc Sulphate shall be certified by competent authority for using in fertilizers for crop, Cattle feed, Cosmetic industries and Pharmaceutical industries.</p>
3.	M/s Shree Shubh Chemicals Plot No. 6603, GIDC, Ankleshwar-	Spent Sodium Acetate Solution (generated during manufacturing of Methyl Violet Base and Methyl Violet Dye).	Sodium Acetate.	Process involves evaporation water at 100 to 110°C to concentrate the from Spent Sodium Acetate solution. The	<p>The committee observed that the unit has no information about the process and raw materials/Products /by-products during generation of Spent Sodium Acetate Solution. The committee, therefore, recommended that the industry shall submit following details:</p> <p>1. Name of the units from where Spent Sodium</p>


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	393002, Dist: Bharuch			concentrated solution is transferred in to an open pan and heated to convert it in lumps. Finally after pulverization finished product i.e. Sodium Acetate is obtained.	<p>Acetate Solution would be procured.</p> <p>2. List of raw materials/products and chemical reactions of each of the industrial processes from where Spent Sodium Acetate Solution would be procured.</p> <p>3. Complete assay of (i) Spent Sodium Acetate Solution from each of the industrial processes from where Spent Sodium Acetate Solution is to be collected, and; (ii) product i.e. Sodium Acetate manufactured by utilizing the above Spent Sodium Acetate Solution.</p> <p>The assay reports shall also include individual concentration of all raw materials/products and by-products/possible organic compounds utilized during generation of such Spent Sodium Acetate Solution</p> <p>Upon receipt of the above information, the matter may be discussed in subsequent TEC meeting in presence of proponent.</p>
4.	M/s Maharani Innovative Paints Pvt. Ltd. 49TH KM, Main Mathura Road, Village Prithla, Tehsil & Distt. Palwal-121102 Haryana	Used Waste Thinner (Category: 20.1 of schedule I of HOWM Rules, 2016) generated during washing of colour line with thinner while colour change during painting in automobile industry	Low grade Primer (to be used as in automobile industry)	The process includes filtration by bolting nylon filter cloth followed by sedimentation of Used Waste Thinner in a tank. The residue is sent for disposal to common TSDF. The filtrate is homogenised in stirrer followed by blending with Additives and Resins	<p>The Committee observed that the proposal was already discussed in the first TEC meeting held on 14/12/2016. In accordance with the recommendations of the TEC, the unit were to submit (i) assay for the possibility of 'Carcinogenic Compounds' in their collected used waste thinner; and (ii) Assay reports of the paints and other paints/resins/polymers/etc. used by their suppliers. Based on which, trial run monitoring protocol was recommended.</p> <p>However, the unit has submitted assay reports of products (i.e. Primer) with reference to RoHS</p>

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				<p>for proper bonding. After that it is grinded in Bead Mill where pigment is also added as per the required colour. The same is again filtered to get 250 to 400 mess size product.</p>	<p>directive (2011/65/EU) for Lead, Cadmium, Mercury, Chromium (VI), PBBs and PBDEs. Whereas the TEC has recommended for analysis of used waste thinner.</p> <p>In view of the above and after deliberation by the unit, TEC recommended submission of (i) Analysis reports of the Used/Waste Thinner used as raw material, and; (ii) Analysis report of the product i.e. Primer, produced from Used/Waste Thinner; for the following parameters (in addition to parameters reported in the said earlier report of products):</p> <ul style="list-style-type: none"> (i) PCBs (ii) PAHs; and (iii) Heavy Metals <p>Upon receipt of the same, the committee recommended for trial run and standards in Trial Run Monitoring Protocol may be prescribed for parameters as applicable in IS15489:2013 for Paint besides parameters and standards as per OSHA standards. TEC also recommended standard of Lead in product i.e Primer as well as Used/Waste Thinner as < 300 ppm as RoHS standard for Lead (Pb) is < 1000 mg/Kg (ppm) whereas BIS standard for Lead as per IS15489:2013 (revision dated 20.03.2014) is 300 ppm.</p> <p>For such trial study protocol, matter may not be required to be placed further to TEC. However, in case of presence of PCBs in Used/Waste Thinner, utilization of the same including trial study may not be permitted.</p> <p>TEC also recommended that the product may be termed as "Primer" instead of "Low Grade Primer".</p>

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5.	M/s Gayatri Industries, Plot No: 32 , Uma Ind. Estate, Vasana Lyava, Sanand Ahmedabad	Spent Sulphuric Acid (category: 26.3 of schedule I of HOWM Rules, 2016), generated during manufacturing of Linear Alkyl Benzene Sulphonic Acid	Ferrous Sulphate and Ferric Alum.	Process involves slow addition of Sulphuric Acid in a reactor having solution of FeO/ Bauxite (for Sulphate and Ferric Alum respectively). After 2-3 hours, crude mass is taken into filter pres for filtration. The filtrate obtained after filtration is crystallized and centrifuged and dried to get final product. Mother liquor obtained during centrifuge and crystallization process is further used in next batch and sludge generated from filter press is sent to TSDF for final disposal.	<p>The committee recommended that the industry shall submit following details:</p> <p>1. Complete assay of (i) Spent Sulphuric Acid from each of the industrial processes from where Spent Sulphuric Acid is to be collected, and; (ii) product i.e. Ferrous Sulphate and Ferric Alum manufactured by utilizing the above Spent Sulphuric Acid.</p> <p>The assay report shall also include individual concentration of all raw materials/products (i.e. Linear Alkyl Benzene, Linear Alkyl Benzene Sulphonic Acid and total organic compounds) and by-products/possible organic compounds utilized during generation of such Spent Sulphuric Acid.</p> <p>Upon receipt of the same trial run permission may be granted to M/s Gayatri Industries as per trial monitoring protocol prepared by CPCB (given at Appendix C). The analysis of mother liquor may also be done after fourth and 10th cycle of recycling of mother liquor.</p> <p>The product i.e. Ferrous Sulphate prepared by using above Spent Acid, shall be certified by competent authority before using it in fertilizers.</p> <p>The unit has proposed that Ferric Alum prepared by using above Spent Acid shall not be used in water treatment for drinking water.</p>
6.	M/s Shree Kala Intermediates p. Ltd., Plot NO. C-1B.124/3,4&5,	Spent Aluminum Chloride solution [listed in schedule II of Hazardous and Other Waste (Management and	Poly Aluminum Chloride & Potassium Chloride	The utilization process includes mixing of aluminum chloride solution with Alumina	<p>The committee recommended that the industry shall submit following details:</p> <p>A. <u>For Utilization of Spent Aluminum Chloride</u></p>

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S.N.	Name of the Industry	HW as Raw Material	Product	Process	Recommendations
	G. I. D. C., Nandesari Vadodara	Transboundary Movement) Rules, 2016, (Serial No.- 5, 10 and 12 listed at item No. - 7 of the note of the said schedule)] generated during manufacturing of m-Phenoxy benzaldehyde, benzaldehyde Acetal, Bromobenzaldehyde Indolinone, Potassium Phenate and Acetyl Yara Yara & Potassium Chloride Solution (Category-B2040)		Hydrate/Aluminum Powder and Sodium Hydroxide. After the 3 hrs reaction mixture is filtered to get Poly Aluminum Chloride. Alumina reacts with residual HCl and generates AlCl ₃ in the process. The Poly Aluminum Chloride thus formed may contain sodium chloride and calcium chloride with traces of HCl and halogenated compound. The solid cake obtained during filtration is sent to NECL. The Potassium Chloride crystals are prepared by evaporation of spent Potassium Chloride solution followed by drying.	<p>1.Complete assay of (i) Spent Aluminum Chloride from each of the industrial processes from where Spent Aluminum Chloride Acid is to be collected, and; (ii) product i.e. Poly Aluminum Chloride manufactured by utilizing the above Spent Aluminum Chloride. The assay report shall also include individual concentration of all raw materials/Products /Products (, benzaldehyde, m-Phenoxy benzaldehyde, benzaldehyde Acetal, Bromobenzaldehyde, CPDCA, Indolinone, Potassium Phenate, Acetyl Yara Yara. and total organic compounds) and by-products/possible organic compounds utilized during generation of such Spent Aluminum Chloride.</p> <p>2.Revised flow diagram for utilization of Spent Aluminum Chloride solution</p> <p><u>B. For Utilization of Spent Potassium Chloride Solution</u></p> <p>1.Name of the units from where Spent Potassium Chloride Solution would be procured.</p> <p>2.List of raw materials/products and chemical reactions of each of the industrial processes from where Spent Potassium Chloride Solution would be procured.</p> <p>3.Complete assay of (i) Spent Potassium Chloride Solution from each of the industrial processes from where Spent Potassium Chloride Solution is to be collected, and; (ii) product i.e. Potassium Chloride Solution manufactured by utilizing the above Spent Potassium Chloride Solution (ii) if, Spent Potassium Chloride Solution is procured from Bromine recovery plants then unit shall also</p>

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					<p>provide the details of the raw materials used for bromine recovery alongwith their generation process.</p> <p>The assay report shall also include individual concentration of all raw materials/Products/by-products/possible organic compounds utilized during generation of such Spent Potassium Chloride Solution.</p> <p>The unit proposed to submit revised application for utilization Spent Aluminum Chloride to produce Aluminum Chlorohydrate.</p> <p>Upon receipt of the above information, the matter may be discussed in subsequent TEC meeting in presence of proponent.</p>
7.	M/s Amrit Dye Chem Industries Plot No. 268, 2nd Phase, Near Sadar Chawk, GIDC Vapi-396195, Dist-Valsad	Spent Sulphuric Acid category: 26.3 of schedule I of HOWM Rules, 2016) generated during manufacturing of G-Salt.	R-complex and Gamma Acid	<p>Process involves slow addition of Sodium Chloride in a reactor having solution of Spent Sulphuric Acid.</p> <p>The slurry mass obtained during the process is centrifuged to get R-complex. Mother liquor obtained from centrifugation is used for isolation of Gamma Acid.</p> <p>For separation of Gamma Acid, fresh water, Sulphuric Acid and above mother liquor is mixed in a</p>	<p>The committee recommended that trial run permission may be granted to M/s Amrit Dye Chem Industries as per trial monitoring protocol prepared by CPCB (given at Appendix D).</p> <p>The product i.e. R-complex would be utilized only in industrial use and shall not be used in food/beverages products and product should be labelled with the same.</p>

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				reactor. The wet cake is formed during the process is washed with water, dried and pulverized for final packing. Te off gasses from the reactor are scrubbed using SO ₂ scrubber, where sodium bi Sulphite is produced as by-product. The water generated during the process is sent to ETP for treatment	
8.	J.J. Corporation Plot No.-193/3, GIDC Estate, Vapi, Dist- Valsad - 369195	Spent dilute phosphoric acid (Category 26.3) generated during Cyclization process in manufacturing QUINACRIDONE pigment in Dye & Dye Intermediate Industry.	Dibasic Calcium Phosphate (IP grade) used as dilute/excipient in pharmaceutical industries	The unit is proposing the utilization of above waste in manufacturing of The spent dilute phosphoric acid is used to manufacture Di Basic Calcium Phosphate (DCP), which involves neutralization of phosphoric acid with milk of lime solution to get desired pH. Then the solution is filtered and the cake is washed with plenty of water and dried in	The committee recommended that the unit shall provide (i) complete detailed flow diagram of the utilization process including details of vents, scrubber and pollution control mechanism. Upon receipt of the same trial permission may be granted by CPCB without further referring to TEC. The trial run monitoring protocol shall include: 1. Analysis of Spent Phosphoric Acid w.r.t. % acid; water; Di Anilino Terephthalic, Dimethyl succinylsuccinate; 2,5 diarylamino dihydrophthalic acid; 2,5 diarylamino 3,6 dihydrotraphthalate, and; quinacridone. 2. Analysis of Mother Liquor generated in first initial batch followed by subsequent 05 th , 10 th and 15 th batch of recycling the said Mother Liquor; with respect to Phosphate, BOD, COD, TOC, etc.

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				drier. Mother liquor is having pH greater than six and is neutralized with lime to get pH 7. Very little solids (lean DCP) are further recovered from ETP and recycled back to main process. Wherein it is dissolved in acid and precipitated with milk of lime solution to get Di Basic Calcium Phosphate (DCP) IP grade.	<p>3. Analysis of inlet and outlet of ETP effluent generated during utilization process for parameters stipulated for Pharmaceutical (Manufacturing and Formulation) Industry notified vide Environment (Protection) Third Amendment Rules, 2009 notified by G.S.R.512(E), dated 09/7/2009 and Consent to Operate issued by Gujarat PCB. The standards for the same may be prescribed on the basis of such analysis report.</p> <p>4. The product shall be analysed for parameters prescribed in Indian Pharmacopoeia (IP) from certification agencies like Central Drugs Standard Control Organization (CDSCO) under Ministry of Health and Family Welfare, etc.</p>
9.	M/s Aims Chemical Industries, Plot No. 905/1, GIDC, Panoli, Tal & Dist: Bharuch-393002	Spent Sodium Thiosulphate solution (generated during the manufacturing of Sulphur Dyes i. e. Sulphur black)	Sodium Thiosulphate	Process involves evaporation water from spent Sodium Thiosulphate solution to get dried Sodium Thiosulphate solution.	<p>The committee observed that the unit has not provided information about the process and raw materials/Products/by-products used during generation of Spent Sodium Thiosulphate solution. The committee, therefore, recommended that the unit shall submit following details:</p> <ol style="list-style-type: none"> 1.Name of the units from where Spent Sodium Thiosulphate solution would be procured. 2.List of raw materials/products and chemical reactions of each of the industrial processes from where Spent Sodium Acetate Solution would be procured. 3.Complete assay of (i) Spent Sodium Thiosulphate solution from each of the industrial processes from where Spent Sodium Thiosulphate solution is to be

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					<p>collected, and; (ii) product i.e. Sodium Thiosulphate manufactured by utilizing the above Spent Sodium Thiosulphate solution. The assay report shall also include individual concentration of all raw materials/products and by-products/possible organic compounds utilized during generation of such Spent Sodium Thiosulphate solution.</p> <p>Upon receipt of the above information, the matter may be discussed in subsequent TEC meeting in presence of proponent.</p>

R. K. Singh