Central Pollution Control Board
WM - II Division, Delhi

Sub: Minutes of the Eleventh 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. Eleventh 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 07.05.2018. 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. He informed about the revised time frame for completion of various activities in processing applications under Rule 9 of the HoWM Rules, 2016, which were approved in 180th Board Meeting of Central Board held on 22.03.2018 at CPCB, Delhi. Details of the same is given at ***Annexure B***. Further, he also proposed amendments which may be required in Standard Operating Procedures being followed by CPCB for processing applications under the said Rule 9 with regard to:

   (a) Revision of prescribed Format for making applications under Rule 9 of the HoWM Rules, 2016, for ease in process of examination and evaluation of utilization proposal, and;
   (b) Not to generalize ambient air quality monitoring requirement during trial run unless recommended by TEC in specific cases

   After detailed discussions, the committee recommended the above and the revised Standard Operating Procedures (SOP) which includes the revised timeline and the revised format for making applications under the said Rule 9 as agreed by the expert members of the TEC is given at ***Annexure C***.

   Sh. Sharma also informed that in compliance with order dated 24/07/2017 of the Hon'ble Tribunal, Western Zone Bench, Pune in the matter of OA No. 20/2017 and OA No. 42/2017, a joint committee of representatives from CPCB, Gujarat PCB and NEERI has submitted report to the Hon'ble Tribunal, Pune pertaining to Morbi and Wankaner industrial cluster area that till a cleaner technology for synthetic gas generation is demonstrated, ceramic industries having gasifier may opt for PNG. If gasifier generating tarry residue is not operated, there may not be tarry residue waste available for utilization. However, order of the Hon'ble Tribunal in this regard is awaited. As a result, SoP for the utilization of Tarry Residue (generated from Coal Gasifier) for production of Creosote oils and Coal Tar Pitch, as finalized in the last meeting of the TEC held on 12/03/2018 at CPCB, Delhi, has been kept in abeyance till the judgment/orders of the Hon'ble National Green Tribunal, Pune.

3. Thereafter, TEC reviewed the following 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:

Sl No.	Agenda	TEC Recommendation
1.	Standard Operating Procedure (SOP) for utilization of Spent Sulphuric Acid generated during manufacturing of G-Salt for production of R-Complex and Gamma Acid.	SoP & Checklist of Minimal Requisite Facilities for the said utilization, as recommended by TEC, after incorporating suggestions, is given at ***Annexure – I***
2.	Standard Operating Procedure (SOP) for utilization of Spent Ammonium Chloride	SoP & Checklist of Minimal Requisite Facilities for the said utilization, as recommended by TEC, after

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	Solution generated during manufacturing of Hexamethyl Disilazane for production of Ammonium Chloride.	incorporating suggestions, is given at ***Annexure – II***

4. TEC in its 10th meeting held on March 12, 2018, at CPCB, Delhi, has suggested that Gujarat PCB may ask representative of industrial association to make technical presentation in the next TEC meeting about scope of utilization of spent acid generated from various Dye & Dye intermediate industries in ETP. The same may enable CPCB in developing one single SOP for such utilization instead of going through multiple trial runs on case to case basis. In accordance with the aforesaid suggestions of the TEC, technical presentation was made by representatives of Gujarat Dyestuff Manufacturers Association, Gujarat, about scope of utilization of spent acid (generated from various Dye & Dye intermediate industries) in Effluent Treatment Plant.
After discussion, it was recommended that GPCB may prepare draft SOP for utilization of spent acid (generated from dye & dye intermediate sector) in the ETP of textile industry sector. The said draft SOP may be placed in next TEC meeting for reviewing and finalization of the same.

5. The following applicants were requested to make technical presentation before the committee:

(i) M/s Ganeshkrupa Chemicals & Fertilizers Pvt. Ltd., Shed No. 2, Sadhana Farm, Paria Road, Killa, Pardi, Dist. Valsad, Gujarat - 396 125.

(ii) M/s Vitrag Chemicals, Plot No. C-1-B/81,100 Shed, GIDC, Vapi, Taluka: Pardi, District: Valsad - 396 195.

(iii) M/s Aarti Industries Limited (Anushakti Division) Survey No.1430/1, N.H. No. 8-A, Tal. Bhachau, Dist. Kutch, Gujarat-370140.

(iv) M/s Ester India, Plot no. 128/129-30, GIDC Estate, Nandesari, Dist.- Vadodara.

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

6. The meeting ended with vote of thanks to the Chair.

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Annexure A

CENTRAL POLLUTION CONTROL BOARD
DELHI- 110 032

Date: May 07, 2018

Venue: Conference Hall, Second Floor, Parivesh Bhawan, CPCB, 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	Chairperson
2.	Prof. Kamal Kishore Pant	Department of Chemical engineering, Indian Institute of Technology, Delhi	Member
3.	Dr. Akhil Kumar Swar	Senior Environmental Engineer, Odisha Pollution Control Board	Member
4.	Ms. Manali Bhatt	Deputy Engineer, Hazardous waste management, Gujarat Pollution Control Board	Member
5.	Sh Dinabandu Gouda	Additional Director, IPC-I Div, CPCB, Delhi	Member
6.	Sh Bharat K Sharma	Additional Director & Head, WM-II Div, CPCB, Delhi	Member Convener
7.	Sh B. R. Naidu	Regional Directorate (W), Central Pollution Control Board, Vadodara	Invitee
8.	Ms P K Selvi	Scientist 'D', WM-II Div, CPCB, Delhi	Invitee
9.	Ms Arti Yadav	Research Associate-I, WM-II Div, CPCB, Delhi	Invitee
10.	Ms Rupali Gupta	Junior Research Fellow, WM-II Div, CPCB, Delhi	Invitee
11.	Sh Varun Prabhu	Junior Research Fellow, WM-II Div, CPCB, Delhi	Invitee

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Annexure III

Recommendation of the 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	Process	Recommendations
1.	M/s Ganeshkrupa Chemicals & Fertilizers Pvt. Ltd. Shed No. 2, Sadhana Farm, Pardi-Paria Road, Killa, Pardi, Dist. Valsad, Gujarat-396125	Spent Nitric Acid (hazardous waste): B 15 of Schedule II of HOWM Rules, 2016 generated from manufacturing of nitro cellulose chip (chemical industries)	Calcium nitrate tetra hydrate to be used industrially as concrete admixture in buffering and in making explosive.	The spent nitric acid (30%) which is generated in the three stage water scrubber system of the nitro cellulose chip process, is proposed to be utilized in place of spent nitric acid (60%), for manufacturing calcium nitrate tetra hydrate. The utilization process involves addition of lime stone/calcium oxide and spent nitric acid in the reaction vessel for neutralization followed by addition of hydrogen peroxide in the reaction vessel at temp 50-60 °C to oxidise any impurity if present. The solution is filtered through the activated carbon bed for removal of traces of organic product, if present. The filtrate solution is sent to the evaporator at temp 110-130 °C. The concentrate is allowed to cool in crystallizer at temperature of 45-50 °C. The entire mass solidified i.e. calcium nitrate tetra hydrate crystal is pulverised, sieved and packed in powder form.	The committee observed that the evaporator installed for concentrating the filtrate is an open system and there is no control over the vapours/associated emissions. Therefore, the committee recommended to install condenser over the evaporator and condensate may be collected separately. The trial monitoring study may be permitted upon submission of photographs as proof of the installation of condenser. After that the trial run may be conducted including the following; i. Analysis of hazardous waste w.r.t. pH, Purity of nitric acid, concentration of sulphuric acid, moisture, TOC and COD. ii. Analysis of product w.r.t. pH, Purity of calcium nitrate, moisture, TOC. iii. Source emission in the following locations; a. Stack attached to the Reaction vessel w.r.t particulate matter, Ammoniacal nitrogen and Acid mist b. Stack attached to Condenser w.r.t NO_x and acid mist c. Stack attached to Pulveriser and sieving w.r.t particulate matter. iv. Fugitive emissions shall be monitored for near the reactor w.r.t Nitric acid, NO_x, CO_2 and PM_{10}) and near pulveriser w.r.t PM_{10}. v. Condensate water shall be monitored for pH, COD, acidity. Draft Trial monitoring protocol for utilization of

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Sl. N	Name of the Industry	HW as Raw Material	Product	Process	Recommendations
					spent nitric acid for manufacturing of calcium nitrate tetra hydrate is given at ***Appendix 1***
2.	M/s Vitrag Chemicals, Plot No. C-1-B/81,100 Shed, GIDC, Vapi, Ta.: Pardi, Dist.: Valsad.	Spent sodium hypochlorite and caustic: C15 of schedule II of HOWM Rules, 2016) generated from dye & dye intermediate (generated from the chlorine scrubber of meta di Chloro benzene manufacturing process & 1,4 Dioxane & 2-Methyl-1,3-Dioxolane)	Sodium hypochlorite to be used in ETP, an oxidizing agent and textile industry etc.	spent sodium hypo chlorite is generated from the chlorine scrubber of meta di Chloro benzene manufacturing process. Spent caustic (30 to 40 %) is separated out during the manufacturing process of 1,4 dioxane & 2-Methyl-1, 3- Dioxolane. The utilization process involves mixing of spent sodium hypo chlorite solution and caustic solution in the reaction tank with the addition of ice and chlorine. pH of the solution is maintained by adding alkaline solution from the scrubber after completion of reaction final product i.e. sodium hypo chlorite is formed The product will be used in ETP, an oxidizing agent and textile industry etc.	The committee observed that the end use of the product (Sodium hypochlorite) in starch industry, pulp & paper, ETP, Textile, Dyes Industries etc. may be decided upon receipt of the analysis result of the same. The committee recommended that the trial monitoring study may be conducted for 03 batches including the following; i. Analysis of hazardous waste w.r.t. pH, Purity of NaOCl, moisture, chlorides, heavy metals (total concentration of Cu, Ni, Zn, Cd, Pb, Cr, Na, Mn, Co, As, Hg), TOC and COD. ii. Analysis of product w.r.t. pH, Purity of NaOCl, moisture, chlorides, heavy metals (total concentration of Cu, Ni, Zn, Cd, Pb, Cr, Na, Mn, Co, As, Hg), COD and TOC. iii. Source emission in the scrubber attached to reaction vessel w.r.t TOC and Chlorine. vi. Fugitive emissions shall be monitored for w.r.t PM_{10}, Chloro benzene, chlorine and NaOH in the work zone area. iv. Analysis of heavy metals shall also be done before and after passing through candle filter. v. Waste water, if any shall be monitored for pH, TDS, TSS, chlorides, heavy metals, TOC and COD. Draft Trial monitoring protocol for utilization of spent sodium hypochlorite for manufacturing of sodium hypochlorite is given at ***Appendix 2***
3.	M/s Aarti Industries Limited (Anushakti Division) Survey No.1430/1, N.H. No.	Spent hydrochloric acid: Cat. 29.6 under schedule I of HOWM Rules, 2016, generated from	Calcium chloride to be used in De-icing and	Spent hydrochloric acid (30%) is generated during di chloro benzene manufacturing process i.e in the caustic scrubber system	The committee recommended that the trial monitoring study may be conducted for 02 days including the following; i. Analysis of hazardous waste w.r.t. pH, Purity

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Sl. N	Name of the Industry	HW as Raw Material	Product	Process	Recommendations
	8-A, Tal. Bhachau, Dist. Kutch, Gujarat-370140	pesticides industry (i.e. di Chloro benzene manufacturing process)	freezing, road surfacing, water treatment and as a brine in industrial chilling plant	attached to the reaction tank. The utilization process involves addition of calcium carbonate and spent hydrochloric acid in the reaction vessel, where calcium chloride is formed. The said reacted mass is neutralized by addition of lime in the neutralization tank. The reaction mixture is filtered for removal of all suspended impurities and the filter residue shall be sent to the TSDF. The filtrate solution is taken to the evaporator at temp 98° C where water is evaporated. The entire mass is granulated in the granulator at varying temp of 300 ±10 ° C & 140 ± 5° C at inlet and outlet respectively, to collect anhydrous / solid material as product i.e. calcium chloride, which is in powder/ granules/ flakes.	of HCl, moisture, di Chloro benzene, benzene, TOC, total acidity, free chlorine, heavy metals (Pb, As, Hg) and COD. ii. Analysis of product w.r.t. COD, TOC, di Chloro benzene, benzene, specific gravity, chlorides, matter insoluble, $CaCl_2$, $MgCl_2$, alkalinity. iii. Analysis of condensate water shall be monitored for pH, TDS, chlorides, TOC. iv. Source emission in the stack attached to the reaction vessel w.r.t TOC, PM, acid mist v. Source emission in the stack attached to the granulator w.r.t PM. vi. Fugitive emissions shall be monitored near the reaction vessel, evaporation & granulation w.r.t PM_{10} , di chloro benzene, benzene, chlorine and acid mist Draft Trial monitoring protocol for utilization of spent hydrochloric acid for manufacturing of calcium chloride is given at ***Appendix 3***
4..	M/s Ester India, Plot no. 128/129-30, GIDC Estate, Nandesari, Dist.-Vadodara.	Spent Sodium Bromide (NaBr) and Spent Dimethyl Hydantoin (DMH) category: 28.1 of schedule I of HOWM Rules, 2016) from manufacturing of Losartan Potassium (Pharmaceutical industries)	Dibromo dimethyl hydantoin to be used in the manufacturing of Losartum Potassium	Sodium bromide solution is washed using MDC in a reactor with vigorous stirring. To the washed sodium bromide layer dimethyl Hydantoin solution (DMH), soda ash, ice, bromine and chlorine are charged in sequence and allowed to react. Then reacted mass is centrifuged and dried to obtain the product Dibromo dimethyl Hydantoin (DDH). Bottom MDC layer is washed with water followed by distillation and aqueous residue is collected. The distilled MDC is recovered and recycled. The aqueous residue is sent to the hazardous waste generator.	The committee recommended that the trial monitoring study may be conducted for 03 batches including the following; i. Analysis of hazardous waste w.r.t. pH, moisture, TOC and COD. ii. Analysis of product w.r.t. COD, TOC, moisture, pH and purity of Dibromo di methyl hydantoin. iii. Source emission in the following locations; a. Reactor 1 w.r.t TOC, MDC); b. Reactor 2 w.r.t chlorine, bromine and TOC c. Dryer w.r.t PM and TOC iv. Fugitive emissions shall be monitored near Reactor and Dryer w.r.t chlorine and hydrogen bromide. v. Analysis of waste water w.r.t pH, TDS, colour,

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Sl. N	Name of the Industry	HW as Raw Material	Product	Process	Recommendations
					TOC and COD. vi. Analysis of aqueous residue shall be monitored for TDS, COD and calorific value. Draft Trial monitoring protocol for utilization of Spent Sodium Bromide (NaBr) and Spent Dimethyl Hydantoin (DMH) for manufacturing of Dibromo dimethyl hydantoin is given at ***Appendix 4***

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