Central Pollution Control Board
WM - II Division, Delhi

Sub: Minutes of the Twelfth 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. Twelfth 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 18.06.2018. 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.

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

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

   (ii) M/s Dhruv Chemicals, Plot No. 1032/1, GIDC Estate, Panoli, Ta. Ankleshwar, Dist. Bharuch, Gujarat-394116

   (iii) M/s Industrial Carbons Pvt. Ltd., kms 2/6, Ankleshwar- Rajpipala Road, Nr. NH 8 crossing, ONGC post office, Ankaleshwar, Dist. Bharuch, Gujarat- 393010.

   (iv) M/s. Dynamic Industries Ltd., Plot No.: 5501/2, Phase-III, GIDC Vatva, Dist. Ahmedabad, Gujarat- 382 445.

   (v) M/s Shivam Metallurgicals Pvt. Ltd., 16/1 Phase II, CSDIC, Industrial Area, Sitara, Raipur, Chhattisgarh

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

   The details of the proposals along with the recommendations of the committee on the above (i) to (v) are given in Annexure-I.

4. In accordance with recommendations of the TEC in its eleventh meeting held on 07/5/2018, Sh. D M Thaker, Environmental Engineer, Gujarat Pollution Control Board, informed that draft SOP for utilization of spent sulphuric acid (generated from various Dye & Dye intermediate industries) in ETP/CETP has been prepared by Gujarat PCB and the same were discussed.
   After deliberation, it was recommended that the said draft SOP shall be examined by CPCB and the matter shall be placed in the next TEC meeting in order to finalize the same.

5. The committee also observed that various proposals are being received for utilization of spent aluminium chloride (generated from Dye & Dye intermediate, pesticide and pharmaceutical industries) for utilization in Effluent Treatment Plant as neutralizing/ coagulating agent. The committee has already recommended trial runs for utilization of such wastes in CETP, however, such trial runs have been recommended for given sources of generation.
   It is, therefore, felt necessary to prepare generic SOP for utilization of the spent aluminium chloride (generated from Dye & Dye intermediate, pesticide and pharmaceutical industries) in

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ETP/CETP. The committee recommended that Gujarat PCB may prepare a single draft SOP for the same covering all sources of generation of spent aluminium chloride and their utilization in ETP/CETP.

6. The committee also observed that utilization process/technology proposed by applicants to CPCB may or may not be patented and status/conditions of the said patent may not be known to CPCB.
In order to avoid conflict, if any, in this regard, CPCB may seek undertaking/declaration from the applicants that with regard to utilization process/technology proposed by the applicant for grant of approval/preparation of standard operating procedures/guidelines for such utilization under Rule 9 of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, the applicant shall be sole responsible for present or future conflict arising out of patent, if any, pertaining to the proposed utilization/technology and CPCB shall not be held responsible for the same in any form. The said undertaking/declaration may be obtained on non-judicial stamp paper with rubber stamp and authorized signature from the applicant.

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

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Annexure A

CENTRAL POLLUTION CONTROL BOARD
DELHI- 110 032

Date: June 18, 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. Rajeev Gupta	Department of Chemistry, University of Delhi, Mall Road Delhi-110007	Member
3.	Prof. Kamal Kishore Pant	Department of Chemical engineering, Indian Institute of Technology, Delhi	Member
4.	Dr. Akhil Kumar Swar	Senior Environmental Engineer, Odisha Pollution Control Board	Member
5.	Sh. D.M. Thaker	Hazardous waste management, Gujarat Pollution Control Board	Member
6.	Sh. Vinod Babu	Additional Director, Waste Management-I Division, CPCB, Delhi	Member
7.	Sh Dinabandu Gouda	Additional Director, IPC-I Div, CPCB, Delhi	Member
8.	Sh Bharat K Sharma	Additional Director & Head, WM-II Div, CPCB, Delhi	Member Convener
9.	Ms P K Selvi	Scientist 'D', WM-II Div, CPCB, Delhi	Invitee
10.	Ms Vineeta	Senior Scientific Assistant, WM-II Div., CPCB, Delhi	Invitee
11.	Ms Arti Yadav	Research Associate-I, WM-II Div, CPCB, Delhi	Invitee
12.	Ms Rupali Gupta	Junior Research Fellow, WM-II Div, CPCB, Delhi	Invitee
13.	Sh Varun Prabhu	Junior Research Fellow, WM-II Div, CPCB, Delhi	Invitee

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Annexure I

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 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 industry)	Dibromo dimethyl hydantoin to be used in the manufacturing of Losartan Potassium	The unit is proposed to utilize Dimethyl hydantoin (generated during bromination step) and sodium bromide (generated during condensation process) generated during manufacturing of Losartan potassium. The utilization process involves charging of Sodium bromide (NaBr) 12-15% solution with soda ash and water in Reactor-1, which is stirred for two hours. Then the reaction mixture is allowed to settle and separate into layers. The aqueous residue in the top layer is sent to hazardous waste generating industry. The bottom layer of reaction mass (containing NaBr) is charged with dimethyl hydantoin solution 12-15%, Ice, bromine and chlorine into Reactor -2 in sequence and allowed to react. Then reaction mass is centrifuged, and the wet cake obtained is dried through fluidized bed dryer to obtain the product (Dibromo dimethyl hydantion). The mother liquor generated from centrifuge is sent to ETP for treatment.	The committee observed that hydrogen bromide/ bromine vapours would be formed during dispensing of bromine bottles. Thus, the committee recommended that the unit shall install hood with adequate fume suction arrangement at the point of bromine transfer and duct of such suction shall be connected to air pollution control device and stack. The committee also recommended for installation of chlorine and bromine detectors/sensors with alarm system (i.e. HBr/HCl sensors). After installation of the above suction hood and alarm system, the unit shall submit photographs in support of the same to CPCB. Upon submission of the said photographs, trial run may be issued for 03 days and the trial run monitoring protocol may include the following; i. Stack emission monitoring in the following locations; a. Reactor 2 w.r.t. HCl, HBr and Cl_2, and; b. Fluidized bed Dryer w.r.t PM. ii. Fugitive emission shall be monitored near work zone area w.r.t. hydrogen chloride and hydrogen bromide. iii. Analysis of both the hazardous wastes (NaBr and DMH) w.r.t. pH, moisture, COD, TOC and Tetra butyl ammonium bromide/ chloride. iv. Analysis of product w.r.t. COD, TOC, moisture, pH and purity of Di bromo Dimethyl Hydantoin.

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Sl. No.	Name of the Industry	HW as Raw Material	Product	Process	Recommendations
					v. Analysis of Mother liquor (waste water) and aqueous residue shall be monitored w.r.t Moisture, calorific value, COD, CN, Tetra butyl ammonium bromide/ chloride, TDS, Total halogens, Chloride and Bromide. vi. Analysis of scrubbed bleed water shall be done w.r.t. COD, Chloride, bromide. The committee also recommended that the unit shall submit the details of treatment method adopted by the hazardous waste generator for disposal of aqueous residue. Further, the trial run monitoring team of CPCB/GPCB officials may also inspect the treatment facility available at the waste generator premises.
2.	M/s Dhruv Chemicals, Plot No. 1032/1, GIDC Estate, Panoli, Ta. Ankleshwar, Dist. Bharuch, Gujarat-394116.	Spent Aluminium Chloride (hazardous waste) – 26.1 of schedule I and B/10 of Schedule II of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 generated from manufacturing of CPC Green-7/ CPC Green-36 (dye & dye intermediate industry).	Poly aluminium chloride to be used in pharmaceuticals dyes and pigment, etc.	Spent aluminium chloride is generated during manufacturing of CPC green-7 after filtration process. The utilization process of spent aluminium chloride involves neutralization by adding lime/lime stone to remove acidity. The solution is passed through filter press to remove insoluble impurities including traces of pigment present in the solution. Solid waste from filtration will go to the common incinerator. The filtrate i.e poly aluminium chloride contains copper metal which is removed by metal extraction technology. Copper sulphate crystal is formed after stripping and crystallization. After extraction of copper sulphate, Poly aluminium chloride is passed through activated carbon column followed by sand filter to remove organic impurities, if present. The filtered final product i.e poly aluminium chloride is collected and the filter residue generated is sent to the common	The committee observed that there is lack of technical information such as; i. Utilization process for producing poly aluminium chloride (PAC) from spent aluminium chloride w.r.t complete reaction in formation of PAC and complete raw materials involved in PAC manufacturing; ii. Information regarding no. of cycles of mother liquor recycling in the said utilization process, its characteristics and disposal, if any; iii. Maximum number of cycles for reuse of copper extractant and its residues iv. Scope for removal of other heavy metals in the final product (PAC); In view of above, the committee recommended that, v. The application may be considered as utilization proposal for extraction of copper sulphate from spent aluminium chloride (generated from CPC green). vi. In case of utilization of spent aluminium chloride for manufacturing of PAC, the same

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Sl. No.	Name of the Industry	HW as Raw Material	Product	Process	Recommendations
				incinerator.	may be analysed for the parameters specified as per BIS standard vii. End use of the product may not be allowed other than ETP Upon receipt of the same, the said application may be discussed in subsequent meeting of TEC. Also, technically qualified representative from the unit may be invited to make the presentation before the next TEC.
3.	M/s Industrial Carbons Pvt. Ltd., Kms 2/6, Ankleshwar-Rajpipala Road, Nr. NH 8 crossing, ONGC post office, Ankaleshwar, Dist. Bharuch, Gujarat-393010	Spent carbon: 36.2 of Schedule I of Hazardous and Other Waste (Management and Transboundary Movement) Rules, 2016, generated during the manufacturing of 1-(Amino methyl) cyclohexane acetic acid)	Activated carbon will be used in pharmaceutical, agrochemical, fertilizer, dye and pesticide products manufacturing industries	Spent carbon is heated in rotary kiln. The rotary kiln operated at about 450° C then outlet material from rotary kiln will be collected and enforced to natural cooling. Thereafter, the material is pulverized followed by packaging as activated carbon. The product i.e. activated carbon will be used in pharmaceutical, agrochemical, fertilizer, dye and pesticide products manufacturing industries.	It was observed that the applicant was not present in the meeting; however, the proposal was discussed in the committee. After detailed discussion, the committee observed that information provided by applicant is not complete w.r.t. the following: i. Detail of each source of spent carbon generation processes including list of raw material/chemicals utilized/produced during such generation processes. ii. Complete assay of; (a) Spent carbon generated from each of the industrial sources mentioned in point (i) above w.r.t TOC, Heavy metals and halogens; (b) Product i.e. activated carbon manufactured by utilizing each of the sources of spent carbon. iii. Characteristics of spent carbon before and after heat treatment. iv. Activated carbon may be analysed for the parameters w.r.t BIS standard IS 2752: 1995. Upon receipt of the same, the said application may be discussed in subsequent meeting of TEC. Also, technically qualified representative from the unit may be invited to make the presentation before the next TEC.
4..	M/s. Dynamic Industries Ltd., Plot	Spent poly aluminium chloride category: B10,	Spent poly aluminium	Spent poly aluminium chloride which is proposed to be utilized in effluent treatment	The committee observed that the proposal is for utilization of spent aluminium chloride and not

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	No.: 5501/2, Phase-III, GIDC Vatva, Dist. Ahmedabad, Gujarat- 382 445	Schedule: II of Hazardous and Other Waste (Management and Transboundary Movement) Rules, 2016, generated during manufacturing of Pigment Green	chloride to be used in ETP as coagulant.	plant as coagulant in place of fresh poly aluminium chloride is fed to the collection tank provided before the tube settler. Dosing of the same is done in collection tank. After dosing the effluent will go to the primary tube settler, aeration tank, secondary clarifier, treated effluent storage tank, sand filter, charcoal column. The treated effluent is then discharged to CETP.	poly aluminium chloride. Further, various proposals are being received for utilization of spent aluminium chloride and spent sulphuric acid for utilization in Effluent Treatment Plant as neutralizing/ coagulating agent. The committee has already recommended trial runs for utilization of such wastes in ETP/CETP, however, such trial runs have been recommended for given sources of generation. It was, therefore, felt necessary to prepare generic SOP for utilization of the above hazardous wastes i.e. spent aluminium chloride and poly aluminium chloride in ETP/CETP. Accordingly, the committee recommended that upon receipt of the trial run report of the above utilization processes, preparation of generic SOP may be explored. Till such time this application may be kept in abeyance.
5.	M/s Shivam Metallurgicals Pvt. Ltd., 16/1 Phase II, CSDIC, Industrial Area, Sitara, Raipur, Chhattisgarh	Flue gas dust and drosses category: 11.5 & 11.4, Schedule: I of Hazardous and Other Waste (Management and Transboundary Movement) Rules, 2016, generated from secondary aluminium smelting process	Molten synthetic slag i.e. calcium aluminate will be used in steel making furnace as desulphurization slag	The utilization process involves feeding of aluminium dross residue and other raw materials i.e calcined lime & dololime to the furnace through separate hoppers. Dust collector and bag filters are attached to the suction hood provided to feeding hoppers. As the charge moves down the furnace the temperature increases upto 1550 C which melts the charge and eliminates the toxic compounds (i.e Aluminium carbide, Aluminium Nitride, Aluminium Sulfides) during the course of the reaction. Mono calcium aluminate is one of the series of calcium aluminates that are formed when the appropriate proportions of calcium carbonate and aluminium oxide are heated together. Moten synthetic slag i.e Calcium Aluminate is	The committee observed that the utilization proposal for manufacturing of calcium aluminate (to be used as synthetic flux in iron & steel manufacturing) pertains to utilization of white dross generated during primary production of Aluminium. It was recommended that the unit shall provide hood and suction arrangements at the feeding points, material transfer points, crushing and screening circuit and furnaces followed by installation of adequate air pollution control device and provide port hole & Platform for stack monitoring and send photographs to CPCB Upon submission of the photographs as mentioned above, the trial monitoring study may be issued for 04 days (with operation of all the three installed furnaces) and the trial run monitoring protocol may

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				then tapped in the refractory tray for solidification, which is used in steel making furnace as desulphurization slag.	include the following; i. Source emission monitoring in the stack attached to the three furnaces w.r.t PM and CO. ii. Fugitive emissions monitoring in Al dross storage area and near hopper for the parameters PM_{10} and NH_3. iii. Analysis of hazardous wastes (viz. Dross and Dross reject) and the product w.r.t. Alumina, Ar, Mn, Cu, Zn, Cao, SiO_2, Ti O_2, MgO, Fe_2O_3, Na_2O, SO_3, MnO, Cr_2O_3 using X-ray fluorescence method. Besides, analysis of Fluoride shall also be done. Analysis of the product viz. synthetic slag (flux) shall be done for the above parameters with and without utilization of aluminium dross reject. iv. Analysis of scrubber bleed w.r.t Fluoride, Heavy Metal, pH, SS, Ammonia. v. Determine the Capacity of each furnace in terms of m3 and production capacity in terms of tonnes per batch or tonnes per day based on running hours (Weighing of raw material & products may be necessary which industry should provide). vi. Electricity consumption (kwh) during the trial run to determine units consumed per tonne of production of Synthetic slag

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