Hazardous Wastes Utilization in Cement plants : Gujarat Experience

Presented at Chennai on 16-10-2014 by the Chairman, GPCB

Partners of Co-Processing

(A) Cement Mills :

1.Ambuja Cement Ltd – Gir Somnath

2.Ultratech Cement Ltd – Kovaya Works

3.Ultratech Cement Ltd – Jafrabad Works

4.Gujarat Sidhee Cement Ltd – Junagadh

5.Sanghi Industries Ltd – Kutch

6.Shree Digvijay Cement Co. Ltd – Jamnagar

7.Saurashtra Cement Ltd - Porbandar

(B) Major Waste Generators :

1.Pulp & Paper Industry ,

2.Dyes & Dyes Intermediates,

3.Pharmaceutical Industry,

4.Pesticides,

5.Ceramic units having coal gassifiers,

6.Automobile,

7.Petrochemical refinery

(C) Preprocessing Facility :

1. Recycling Solutions Pvt. Ltd.(RSPL),Panoli (Capacity :29200 MTPA).

2. Bharuch Enviro Infrastructure Ltd (BEIL)., Ankleshwar (Capacity : 16000 MTPA)

Current Status of Co processing

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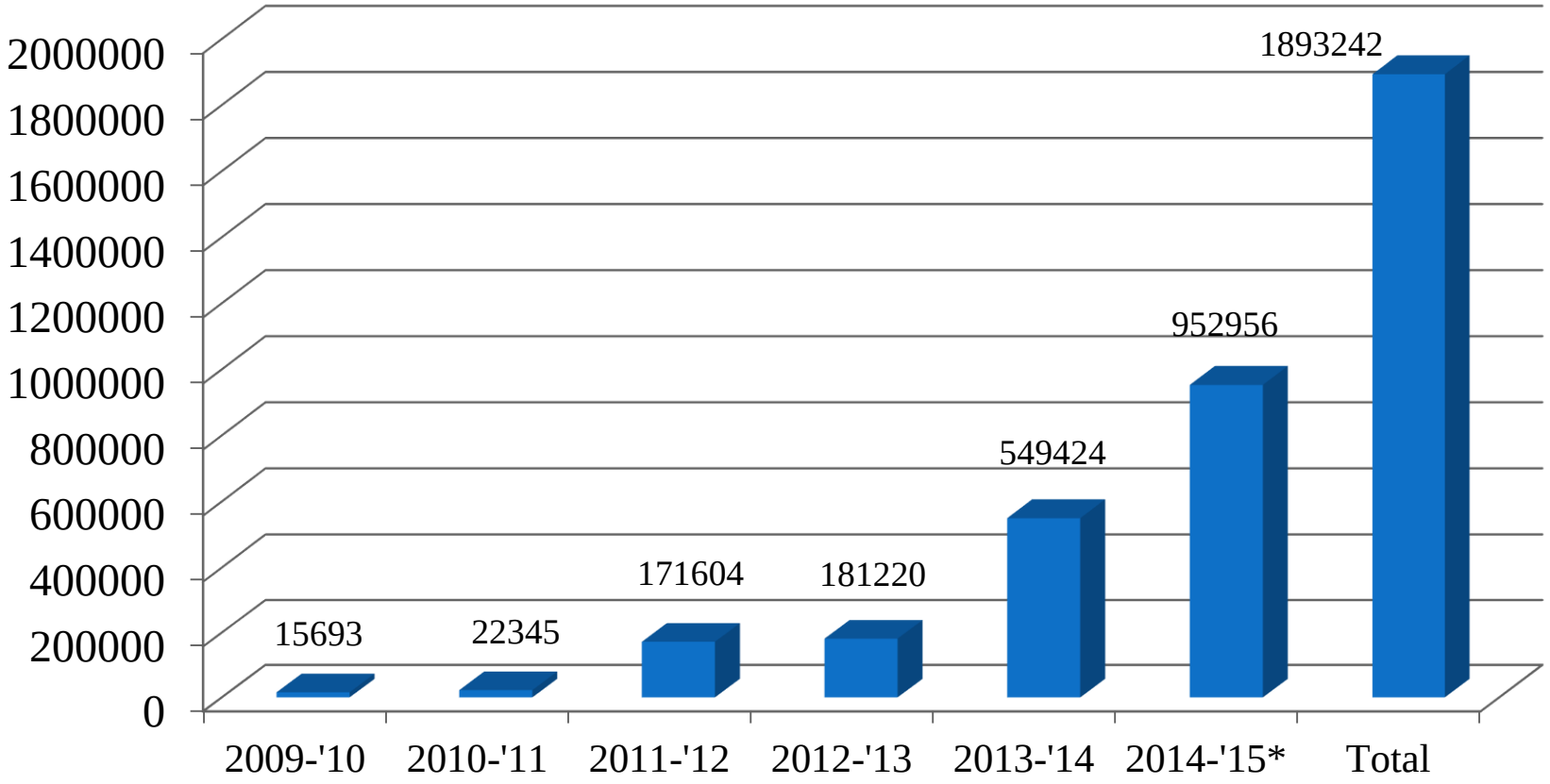
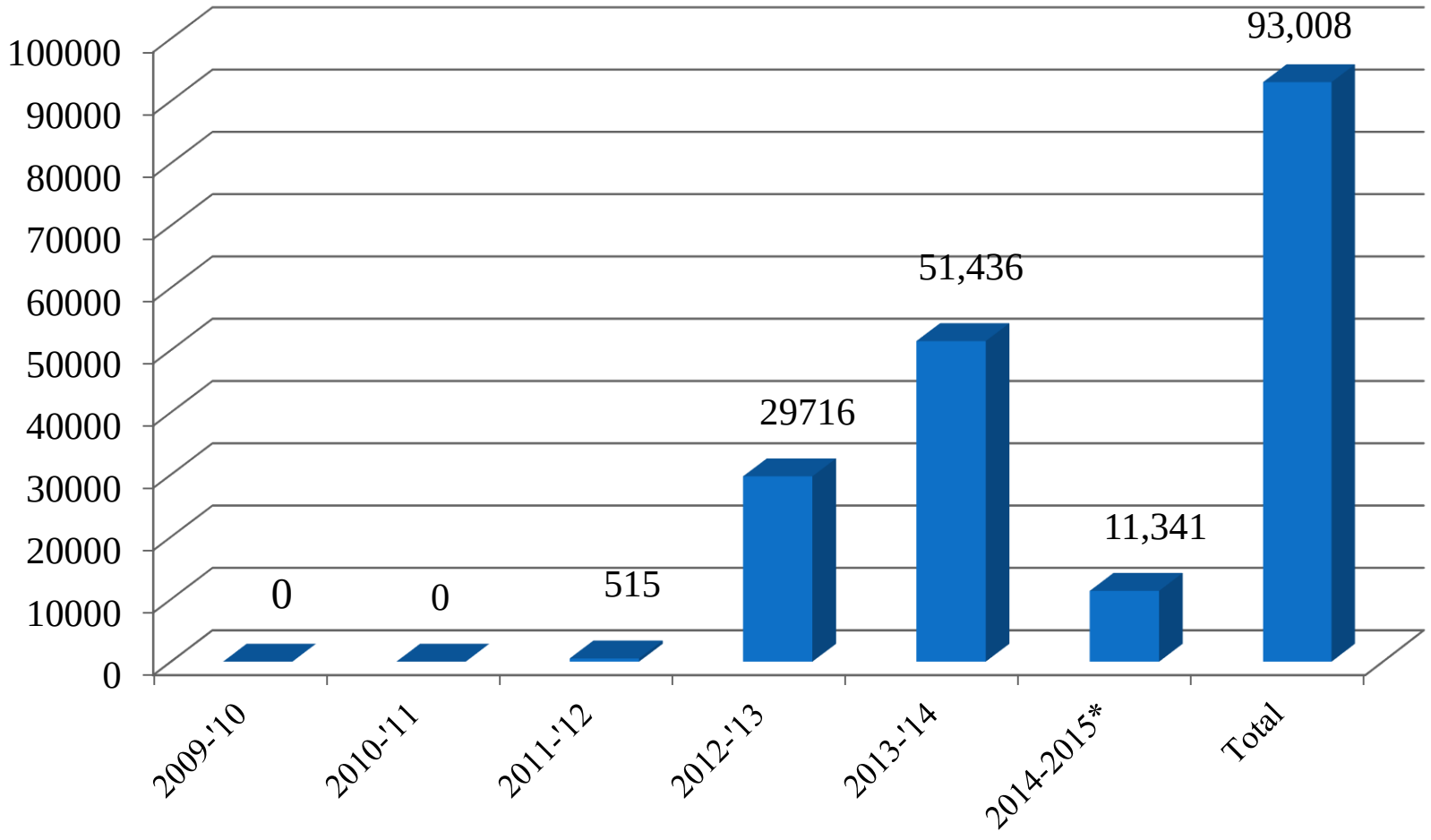
- Approx. 18,93,242 MT of total waste has been co-processed from April 2009 to September 2014
- Approx. 14,99,592 MT of waste has been co-processed as alternate raw material
- Approx. 03,93,650 MT of waste has been co-processed as alternate fuel
- RSPL, Panoli (Pre-processing Facility) has sent 7227 MT of total waste for co-processing
- Authorization accorded to BEIL ,Ankleshwar (Preprocessing facility) for 16,000 MTA of liq. waste for co processing at Ambuja Cement

Total Waste Co-processed (MT)



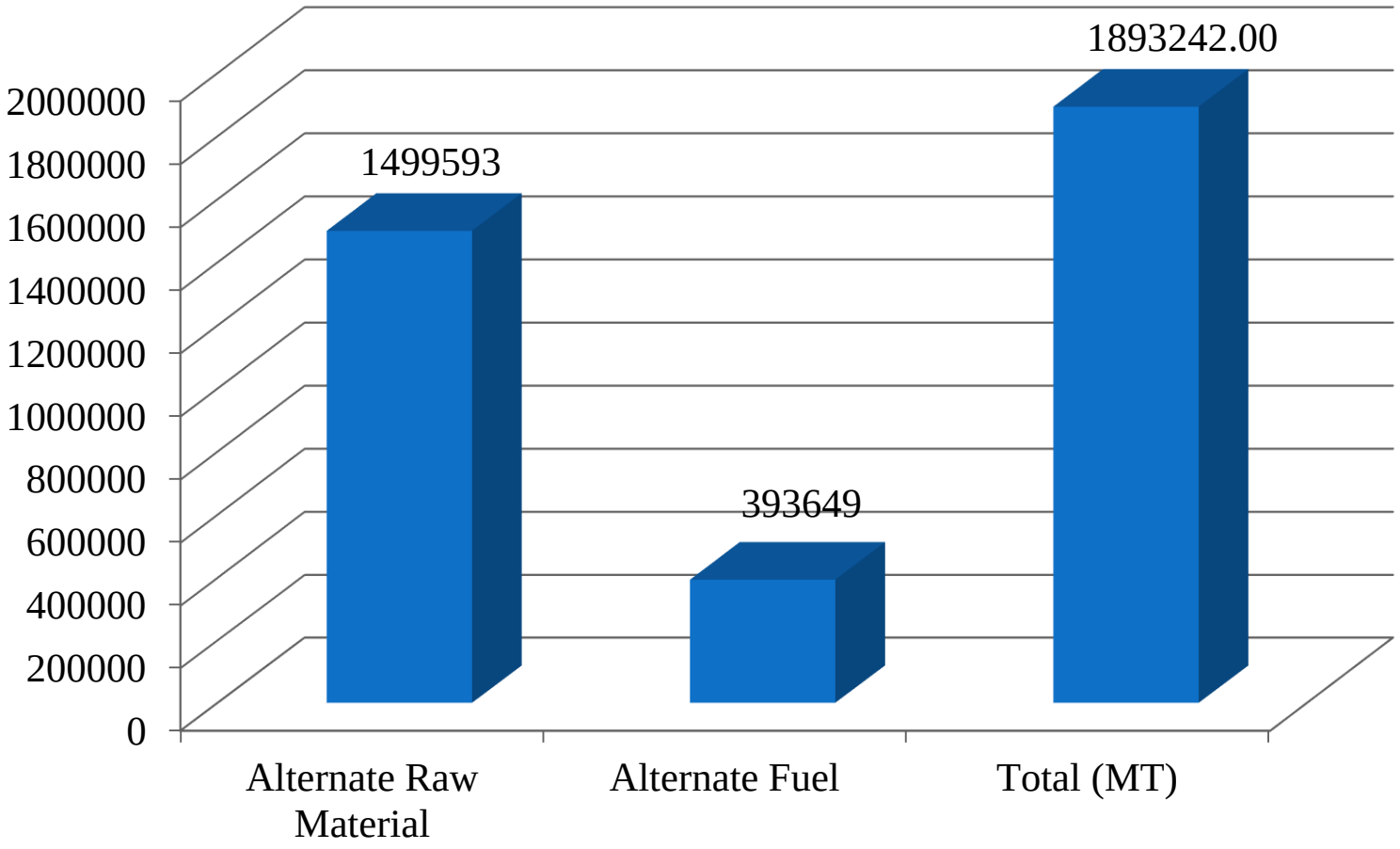
Year wise status is from April to march **** From April 2014 to September 2014***

Total Plastic Waste Co-processed (MT)



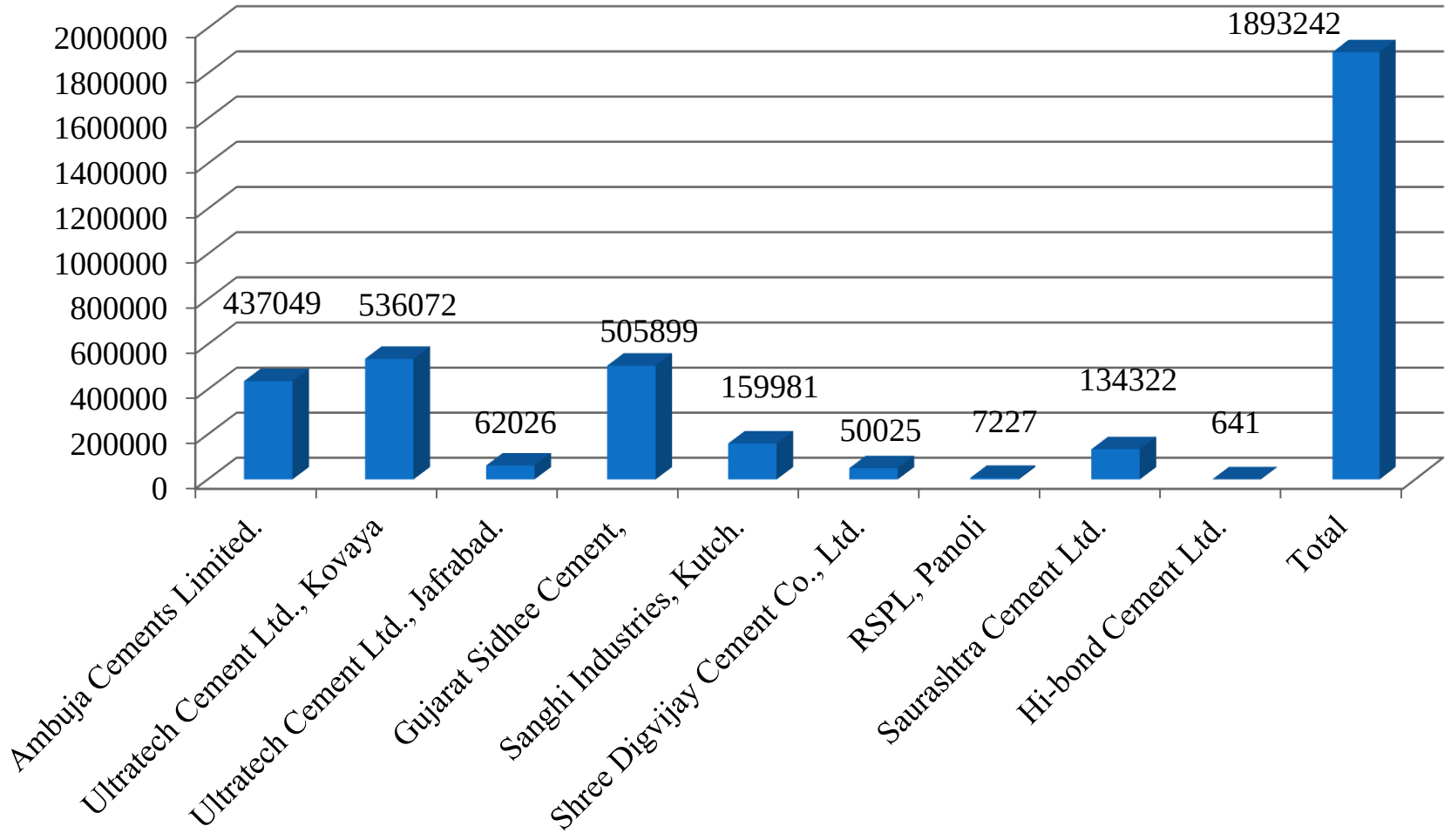
Year wise status is from April to march **** From April 2014 to September 2014***

Total Waste Co-processed (MT)



From April 2009 to September2014

Industry wise status(MT)



From April 2009 to September 2014

Initiatives by GPCB

Arranged One to One Meet with stack holders

Organized series of meetings with cement plants and waste generators to enhance co-processing

Directions were issued to cement plants by MS, GPCB for augmenting co processing up to 10 % within 3 years

Sensitizing the top level management of cement industries

GPCB has conducted series of meetings with local Urban bodies to enhance the rate of co-processing of MSW in various Cement Plants. Currently Bhavnagar Municipal Corporation and Junagadh Municiple Corporation have sent MSW for co-processing

Initiatives by GPCB

Expediting trial runs/ regular permissions at various levels

Constituted a committee for permission for co-processing of hazardous wastes and other wastes in cement plants

Regular monthly Review at MS level

Two pre processing facilities are setup in industrial clusters:

(1) BEIL, Ankleshwar (2) RSPL, Panoli

Initiatives by GPCB

Identification of waste disposal problems of clusters

Availability of Waste Characterization report

Acceptance criteria as per the guideline of CPCB are made available to hazardous waste generators

A web based portal (xgn) has been developed for identifying suitable waste for co-processing to the cement industry

On-line tracking system is developed for movement of hazardous and other wastes

Identification of waste disposal problems of clusters

- Unorganized handling of the Hazardous Wastes.
- Limited area of storage for HW in Small and Medium Enterprises.
- Higher rate of HW generation.
- Non suitability of waste for disposal to TSDF.

Availability of waste characterization report

- Information for regularly permitted waste having prescribed chemical attributes (parameters) is disseminated to the identical waste generators
- To enhance co-processing, access on XGN is given to all cement plants to identify waste generated in the State of Gujarat to avail :
  - Name of the waste and waste generator.
  - Category of the waste.
  - Quantity of the waste.
  - Location of the waste.

Acceptance Criteria as per CPCB guideline

Specification of HW for use as Alternative Raw Material

Parameter	Limit
Volatile organic Hydrocarbon	< 5000 ppm
Total organic Carbon (TOC)	< 1000 ppm
CaO + SiO2 + A1203 + Fe203 + SO3 (In Ash)	> 80 %
Chloride	< 1.5 %
Sulphur	< 1.5 %
PCB/PCT (ppm)	< 5.0
Heavy Metals (ppm) Hg Cd+Tl+Hg As+Co+Ni+Se+Te+Sb+Cr+Sn+Pb+V	< 10 < 100 < 10,000

Specification of HW for use of energy recovery

Parameter	Limit
Calorific Value As received basis	>2500 k Cal/Kg
Ash -Liquid -Solid	 < 5% < 20%
Chloride	< 1.5 %
Halogens (F+Br+I)	< 1.0 %
Sulphur	< 1.5 %
PCB/PCT (ppm)	< 50
Heavy Metals (ppm) Hg Cd+Tl+Hg As+Co+Ni+Se+Te+Sb+Cr+Sn+Pb+V	 < 10 < 100 < 25,00
pH	4 to 12
Viscosity (cSt) for Liquid	< 100
Flash point (Deg Centigrade) (for Liquid)	> 60

Regulatory Forum

To boost up the concept of co-processing of waste in cement plant, a regulatory forum (RF) consisting of Member Secretaries of Andhra Pradesh, Rajasthan, Orissa, Tamil Nadu, Karnataka along with representative of MoEF, CPCB, CMA and IIP constituted under the Chairmanship of Member Secretary, GPCB. The RF met five times and produced five white papers recommending amendments in Acts/Rules to enhance the concept of co-processing.

White Paper I- White Paper on Amending Hazardous Waste Rules, 2008 under Environment Protection Act, 1986 to include Co-Processing in Cement Plant as a Disposal Alternative to provide legal status to concept of co-processing.

White Paper II-Emission standards for co-processing of Alternate Fuel & Raw material (AFR) including Hazardous Waste in Cement Kilns, Emission monitoring methodology and availability of capabilities for monitoring in the country.

White Paper III - Guidelines for Transportation and Storage of hazardous Waste for Co- Processing in Cement Plants

White Paper IV - Guidelines for Commissioning of Pre-processing Plant for Co-Processing of Alternate Fuel & Raw material (AFR) – Including Hazardous Waste in Cement Kilns

White Paper V – Increasing percentage utilization of refused derived fuel (RDF) and fly ash generated from coal based power station in cement plants

White Papers have been submitted to MoEF, Delhi for consideration.

National Task Force on co-processing

- National Task Force (NTF) of waste has been constituted for the period of three years by CPCB to enhance the co-processing of waste at the cement plants vide office order dated 25th August,2014 .

- NTF of 20 members will be chaired by Dr. Satish R. Wate, Director, NEERI and will meet at least once in six months

TOR for NTF

- To explore the possibility to develop the economic model on co-processing of wastes in cement kilns to enhance waste utilization.
- To develop emission standards for co-processing.
- To suggests ways of enhancing co-processing of hazardous waste in cement kilns.
- Follow up with MoEF/SPCB for setting up of pre-processing plants to promote co-processing of waste.
- Follow up with respective State Government for consideration of RDF as approved fuel for use in cement kiln.
- Setting up of RDF plant by large industries under new CSR policy for proper MSW management.

- Co-ordinate with cement/ power plant to promote fly ash utilization through task force of CPCB on TPP.
- R&D work for steel melting slag utilization in cement plant through task force of CPCB on steel plant.
- To address the issue of interstate movement of hazardous waste for co-processing.
- Organize national and regional level workshops to promote co-processing of waste in cement plants.
- To follow up with MoEF for amendment of Hazardous Waste (Management Handling and Transboundary Movement) Rules, 2008 as per recommendation of Regulatory Forum.
- Follow up with MoEF for amendment in EIA 2006 to promote fly ash utilization.

List of Shortlisted Alternate Fuels

Sr. No.	Alternate Fuel
1	RDF from Municipal Solid Waste (MSW)
2	Used Tires
3	Hazardous Waste
4	Industrial Plastic waste
5	Biomass
6	Poultry litter
7	Slaughter House and Dead Animals
8	Dried sewage sludge

Attributes for Short listing of alternate Fuels

Sr. No.	Chosen Attributes
1	Energy Content (Calorific Value)
2	Availability
3	CO2 Mitigation Potential
4	Ease of Processing
5	Addressing Environmental Concerns

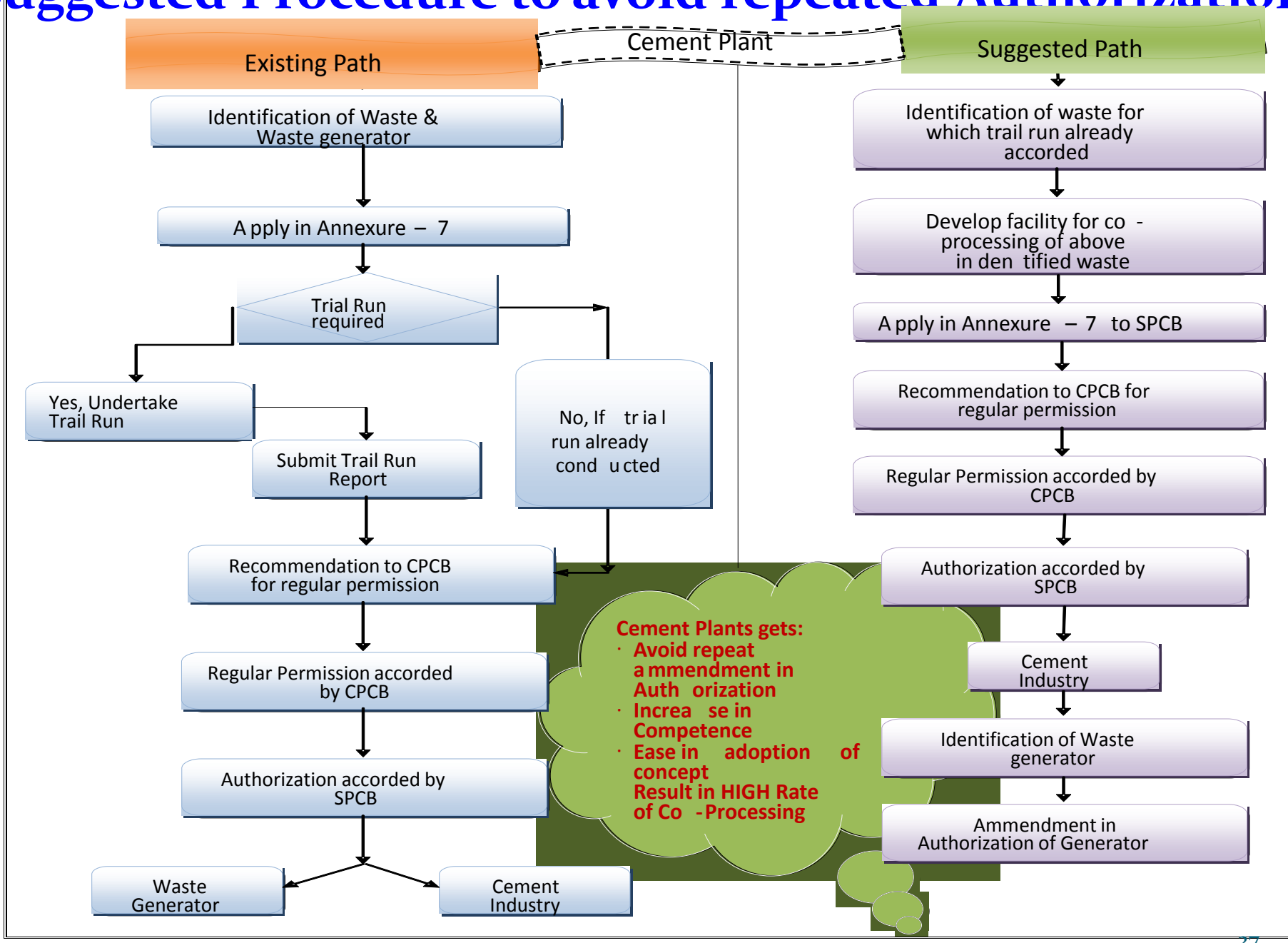
List of Identified Alternate Blending Materials

Sr. No.	Alternate Blending Materials
1	Fly ash (cement blending material)
2	Steel Slag
3	Lime Sludge's (Paper, Carbide, Sugar Sludge)
4	Red Mud
5	Foundry Sludge/ Sand
6	Chrome Sludge as mineraliser
7	Lead Zinc Slag
8	Phosphate Chalk

Attributes for Short listing alternate blending materials

Sr. No.	Chosen Attributes
1	Availability
2	Addressing Environmental Concern
3	CO_2 Mitigation Potential
4	Ease of Processing

Suggested Procedure to avoid repeated Authorization



The requirement of Trial Run for the Non Hazardous Waste may be waived off.

Clause 10.7 of Guideline on Co-processing in cement/steel/power industry : For Non Hazardous Substance like plastic waste, tyre chips etc. Similar procedure may be followed both for trial run and regular permission by SPCB/PCC. The permission granted by SPCB/PCC will be endorsed to CPCB along with trial run report for reference. In case SPCB/PCC desires any clarification, the same may be referred to CPCB.

The Trial run for the Non Hazardous waste may be waived off as:

1. **Conducting Trial Run is costly & time consuming affair.**
2. **Small generators are not capable to afford the same.**
3. **Illegal disposal of Non Hazardous Waste would be reduced.**

Requirement to accelerate co-processing rate

- **Identification of Generator of waste by Cement Industry in Initial stage.**
- **Development of Common Collection cum Pre-Processing Facility.**
- **To remove lengthy procedure for permission.**
- **Supply of adequate technology for pre-processing in industrial cluster.**

Requirement to accelerate co-processing rate

- **Supply of technology to monitor online, all emission parameters.**
- **Removal or reduction of frequent permissions for different wastes.**
- **Supply of adequate Online Tracking system for HAZ-Waste at national level.**

Policy reforms and infrastructure requirement

- For the waste having regular permission of the CPCB for co-processing, regular permission of the similar waste shall be either waived off shall be delegated to SPCB.
- More and more pre-processing facility shall be encouraged with financial subsidy to boost up co-processing.

Way Forward

Efforts are being made to amend HWR (M,H,TM), 2008 for giving legal status to co-processing

The Emission Standards for Co-processing of waste in cement plants are being framed.

Target to achieve Thermal Substitution Rate of HAZ- Waste in cement kiln to at least 10% within 3 years

To encourage the pre-processing facilities in hazardous waste generating industrial clusters & cement plants

Encouraging segregation facilities of MSW for co-processing for preparation of RDF

Way Forward

The issue of interstate movement of hazardous waste should be addressed in a national way by appointing a nodal agency

Technological aspects need to be promoted so as to conserve the fuel in place of utilization of waste as resource

Waste exchange Banks / Collection Centers to provide information on wastes

Sector wise and region wise meetings are on way to use hazardous waste for co processing

To identify new sectors and their waste generators to link up with cement industries

Following details of MSW is to be submitted by local bodies on monthly basis in prescribed form D-3

1	Name and address of the nagar palika/ maha nagar palika and information for the month
2	Address of the fixed site for waste collection
3	No of waste containers (dust bins) placed in the areas
4	How many types of waste are segregated
5	No of waste containers (dust bins) required in the area
6	No of STP sewage treatment and place of discharge

7	Total quantity of treated sewage (KLD) and place (S) of discharge
8	No of out falls of untreated sewage
9	No of STP still required for treatment of untreated sewage
10	Concern Regional office of GPCB

Way Forward

Details of MSW is to be submitted by local bodies on monthly basis in prescribed form D-3

11	No. of vehicles used for waste collection
12	Waste collected during the month (MT)
13	Total accumulated waste at site (s) on the first day of the month (MT)
14	Waste used in Electric Generation (MT)
15	Waste used to make fertilizer (MT)
16	Waste used in Bio-gas generation (MT)

17	Plastic waste used in road construction (MT)
18	Plastic waste sent for co-processing (MT)
19	Plastic waste sent for recycling (MT)
20	Disposal of building material waste (MT)
21	Waste used in any other process (MT)
22	Total accumulated waste at site (s) on the last day of the month (MT)

Way Forward


THANK
YOU