Workshop on New Policy changes

Co-processing in the state of Andhra Pradesh & latest guidelines

Venue: Hotel Minerva Grand, Vijayawada,

Date : 15.03.2017

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Hierarchy of Waste Management

As per HOWM Rules, 2016

a. Prevention
b. Minimization
c. Reuse
d. Recycling
e. Recovery
f. Utilization including pre processing and co - processing
g. Safe disposal

Potential for AFR

- Out of 7.4 Million TPA of Hazardous Waste - 3.98 Million TPA is recyclable – Resource/energy recovery
- 65 Million TPA of MSW – 15 – 20% non recyclable SCF – energy Recovery
- 200 Million TPA Non-Hazardous Waste – Fly Ash, Slag, WTP Sludge, Plastic, Tyres etc – Resource / Eenergy recovery
- Agro Waste

Co – Processing - Advantages

Utilization of Hazardous Waste for co – processing makes a win – win situation

- Resource & energy recovery
- Destroyed at High Temperature (1400^0 C)
- Longer residence time
- In organic content fixed with clinker
- No residues
- Acidic gases gets neutralized
- Reduces requirement of coal and lime stone
- Reduce large quantity of GHG emissions

Potential for co – processing in Cement Plants

- Production of Cement – 300 Million TPA
- Coal – 50 Million TPA
- Lime stone & Additives – 450 Million TPA

Utilization of Hazardous & Other Wastes

The Rule 9 of HOWM Rules, 2016

- "The utilization of hazardous and other wastes as a resource or after pre – processing either for co – processing or for any other use, including within the premises of the generator (if it is not part of process), shall be carried out only after obtaining authorization from the SPCB in respect of waste on the basis of standard operating procedures or guidelines provided by the CPCB.
- Where SOPs or guidelines are not available for specific utilization, the approval has to be sought from CPCB which shall be granting approval on the basis of trial runs and thereafter, SOPs or guidelines shall be prepared by CPCB:

  Provided, if trial run has been conducted for particular waste with respect to particular utilization and compliance to the environmental standards has been demonstrated, authorization may be granted by the SPCB with respect to the same waste and utilization, without need of separate trial run by CPCB and such cases of successful trial run, CPCB shall intimate all the SPCBs regarding the same.

- No trial runs shall be required for co – processing of waste in cement plant for which guidelines by the CPCB are already available; however, the actual users shall ensure compliance to the standards notified under the E(P) Act, 1986, for cement plant with respect to co – processing of waste:

  Provided that till the time the standards are notified, the procedure as applicable to other kind of utilization of hazardous and other waste, as enumerated above shall be followed"

Authorization for PP and /or CP

- Authorization of SPCB is a must for utilization of Hazardous Waste and Other Waste for co – processing.

- No trial runs would be necessary since MoEF notified emission standards (GSR 497 (E) dt.10.05.2016).

- SPCBs grant authorization to cement plants for co processing of wastes listed in Schedule – I, II & III of HOWM Rules, 2016.

- For schedule-IV wastes (Recyclable) – if no recyclers at reasonable distance

- SPCBs may also grant authorization for co – processing of any waste not listed in HOWM Rules, 2016.

- Co – processing do not required EC

- Apply in Form – I for authorization.

SOPs – Responsibility of occupier

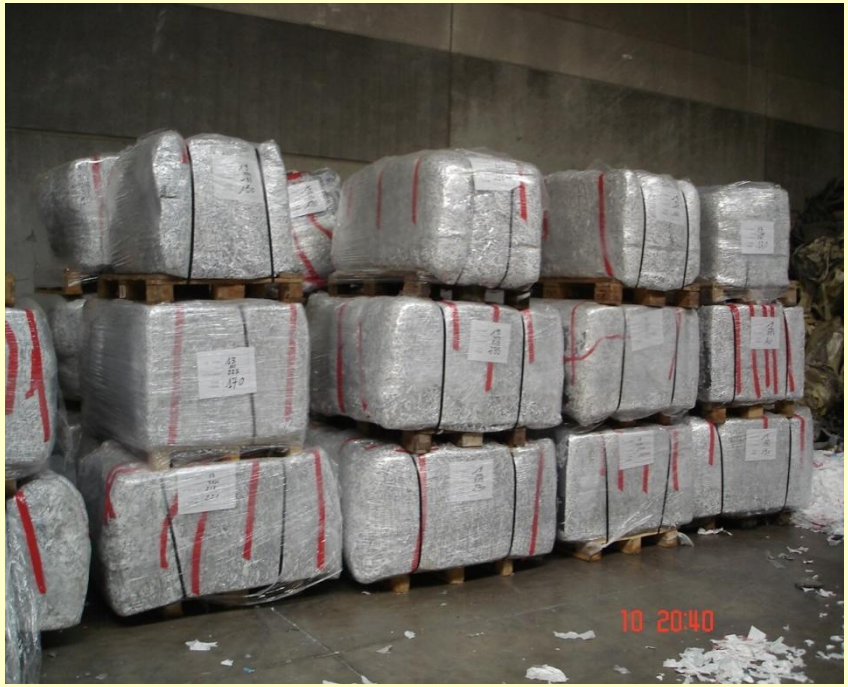
The occupier shall take adequate steps to :

a. Contain contaminants and prevent accidents and limit their consequences on human beings and the environment; and
b. Provide persons working on the site with the training, equipment and information necessary to ensure their safety.

Packaging of Hazardous and Other Wastes – Requirements of containers

a. Not to break or defective
b. No spillages
c. No chemical or galvanic action
d. Leak proof
e. Closed/sealed/covered with solid lid
f. With stand shock loads
g. Easy to handle
h. Bulk transportation without suitable package not allowed
i. Minimize manual handling - use equipment
j. Non compatible wastes shall not be collected in same container

Global Practices – Packaging of Wastes



Bailed Solid Wastes

Packed Liquid Wastes

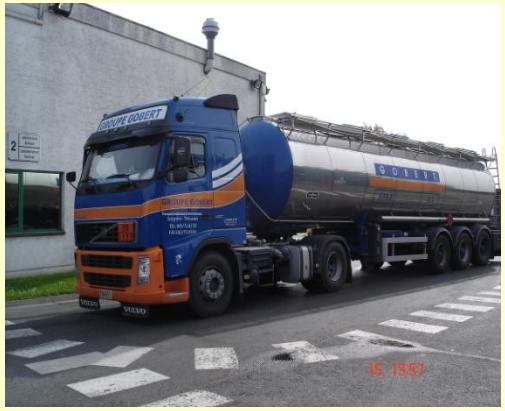
Labelling

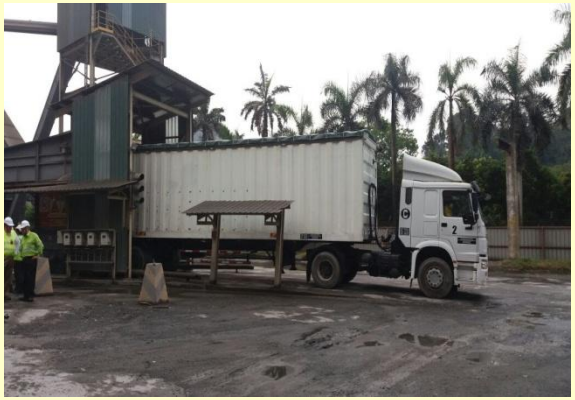
a. Back ground colour – **Fluorescent yellow**
b. HAZARDOUS WASTES – **Red**
c. OTHER WASTES – **Orange**
d. Non washable material & weather proof
e. Code No. of waste, type, origin, Hazardous Property, Symbol for the Hazardous property, emergency contact Nos.

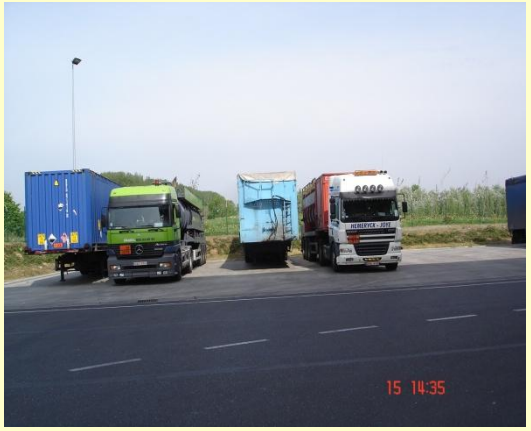
Collection and Transportation

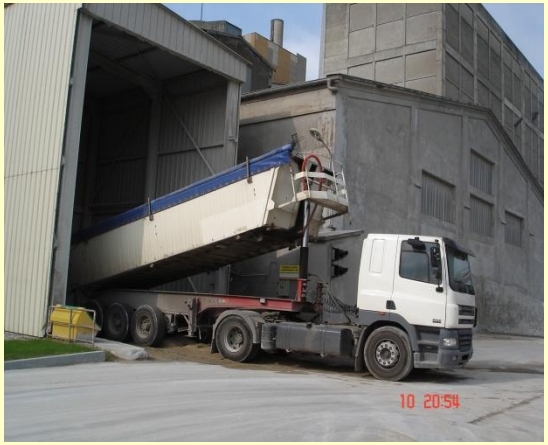
a. Transportation to be engaged either by sender or receiver
b. Responsibility for safe transportation lies with waste generator or occupier of Co – processing
c. Authorization from SPCB for transport by sender or receiver
d. Characteristics of wastes provided on label as per Form-8
e. In accordance with HOWM Rules, 2016 and Motor Vehicle Act, 1988
f. TREM Card
g. Intimate both SPCBs
h. 7 copy manifest
i. Vehicle – Blue colour with white strip
j. Driver – 10^{th} Class
k. Carrying of passengers prohibited

Global Practices - Transportation of Wastes









Storage

- Flammable, Ignitable, reactive & non compatible wastes should be stored separately
- Adequate storage area (25 % of per annum capacity)
- Flame proof electrical fittings
- Fire fighting system
- 15 m distance between sheds
- Fire break of 4 mtrs
- Vehicles with spark arrester
- Concrete/steel floor
- Spillage/leakages controls
- Record keeping

Waste Characterization

Finger print analysis

- Moisture content,
- Ash content
- Net calorific value (NCV)
- Chloride and sulphur content
- Chemical compatibility
- Any other specific parameter, which may be decided on merit of each case keeping the clinker production process in focus
- In case of liquid samples, viscosity, pH, suspended particle content etc shall be performed
- Heavy metal analysis, reactive sulphide, reactive cyanide or halide analysis should be performed if sample comes from a sector which is suspected to have these in the waste material

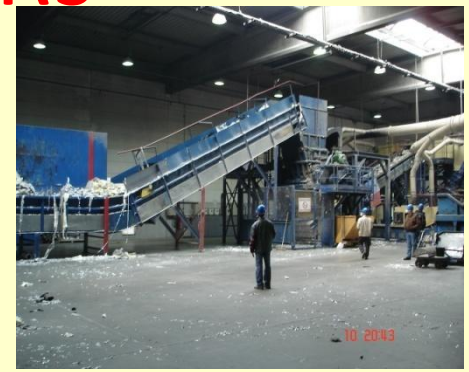
Pre - processing

- Pre processing involves only physical transformations
- Size reduction (Shredding, cutting)
- Separation of foreign materials (Magnetic separators)
- Impregnation (Mixing with Bio-mass / Saw dust)
- Desired size selection (Screening)

Equipment for Pre - processing

- Shredder, Grinder, cutter, Hammer, Jaw crusher, Chipper etc.,
- Trucks, Bob cat, Forklifts, Loaders, Dumpers, Arm handlers, Telescopic handlers.
- Electro- magnetic separators, Metal sorting equipments
- Disc Screen, Rotary Screen, Trommel Screen,
- Belt conveyors, Chain Conveyors, Bucket Conveyors, Pipe Conveyors

Global Practices - Pre-processing of Wastes into AFRs



Co – processing – Feed Points

- Main burner at rotary kiln outlet end
- Rotary kiln inlet end
- Pre - Calciner
- Mid Kiln (for long dry and wet kilns)

Appropriate feed points

- Wastes of high calorific value - high temperature combustion zones
- Wastes containing stable toxic components and also wastes containing more than 1.5% chlorine - main burner to ensure complete combustion in the high temperature and long retention time.
- Coal feeding circuit and raw material feeding circuits – shall not be utilized to feed any type of wastes for co – processing without a trial.
- Feeding of alternative raw materials containing volatile (Organic and inorganic) components to the kiln via the normal raw meal supply should be avoided.
- PCBs, Expired or obsolete pesticides, ODS etc., - only after obtaining specific approval from SPCB and other concerned organization.

Suitability of Substances for Co-processing

GCV of total waste >2500 Kcal /Kg and raw materials = 0 %	Energy recovery.
Ash >50% and raw materials in ash > 80%	Material recovery
Raw material >0% and GCV of the rest >2500 Kcal/kg	Energy & Material recovery
Resolution of a local waste management problem?	Waste disposal / destruction

Emission Standards

Parameter	Standard in mg/Nm^3
PM	30
SO_2	100
NO_X	600 / 800
HCL	10
HF	1
Hg & its compounds	0.05
Cd + Ti	0.05
Sb + As + Pb+ Co+ Cr+Cu+Mn+ Ni+V	0.5
Dioxins & Furans	0.1ngTEQ/Nm^3

Thanks