



**PROTECTING FUTURE
PREFERRED WASTE MANAGERS**

**PRE-
PROCESSING
OF HAZARDOUS
WASTE
ADVANCES &
EXPERIANCES**

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GEPIL**

**Pre-processing Facility (PPF) is
a “Preparatory” or
Pretreatment Unit”**

**For Final Treatment called
“ Co-Processing”**

DIRECT CO-PROCESSING v/s PREPROCESSING - CO-PROCESSING

- Direct Co-processing is utilization of waste as it is; in its original form.
- Conversion of waste in useful form and then its utilization.

BENEFITS OF PRE-PROCESSING FACILITY

- Most of the wastes are not suitable for direct utilization in cement kilns.
- Cement plants need consistent supply of uniform quality of “Wastes Materials” as fuel.
- Ensures consistency in waste quality & emission, uniform operation.
- It avoids large variation in physical and chemical characteristics of waste leading to;
 - Difficulties in unloading
 - Difficulties in Storage
 - Difficulties in Feeding
 - Process Disturbance
 - Product Quality Disturbance
 - Emission Disturbance
 - Legal Compliances
 - Safety Issues
- It ensures safe and healthy condition @ cement plant.
- It ensures “full proof” hazardous waste tracking.

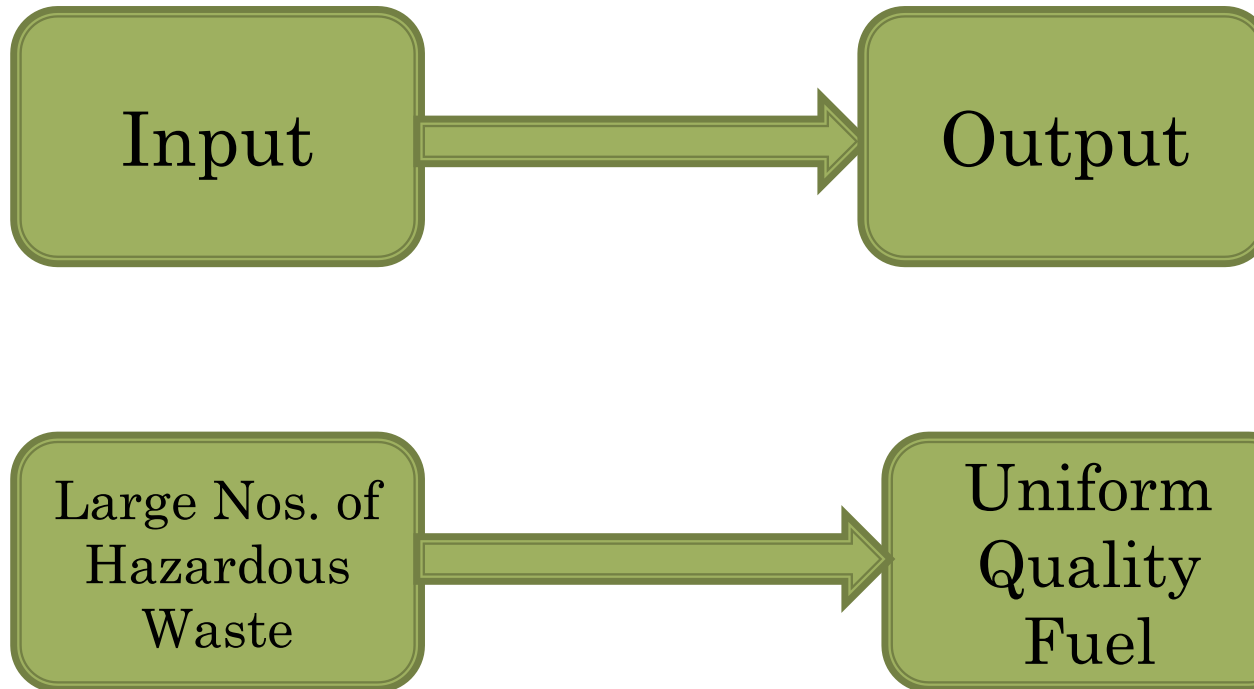
PRE-PROCESSING

Bridge between Waste Generators and
Cement company



AFRF: Alternate Fuel and Resource Facility

AFRF/ PRE-PROCESSING : GENESIS

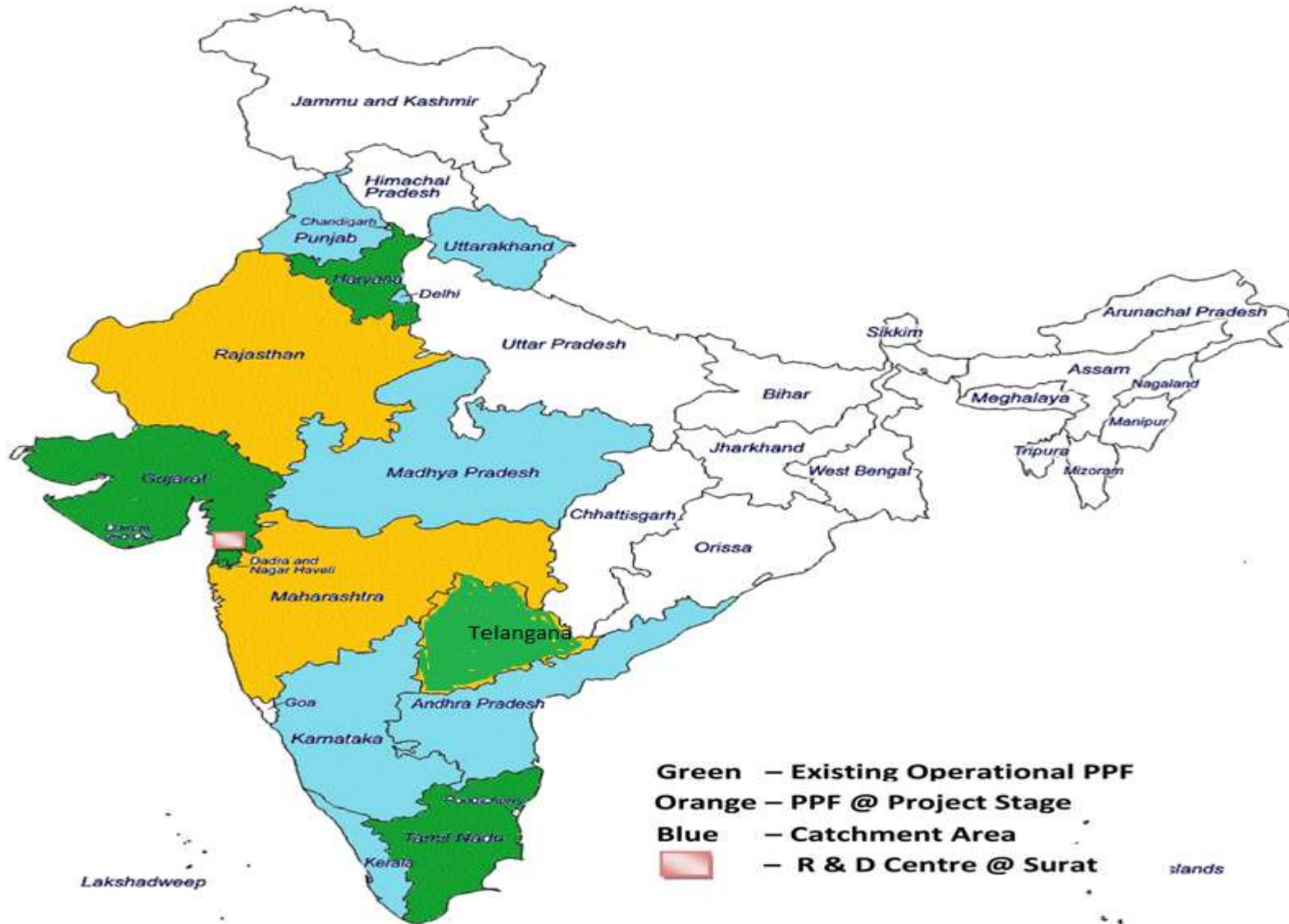


PRE-PROCESSING FACILITY- WHY??

- Waste generation is bound to increase with “make in India” need, growth of population and improvement in quality of life.
- Neither generators nor cement companies are happy with direct co-processing as it is largely not sustainable.
- Present Method of “ Treatment and Disposal” is not sustainable and Risky.
- Need to minimize the Incineration and Landfill
- Direct Co-processing has Limitation and not sustainable.
- Lots of scope exists even after existing recycle/reuse practices.
- Illegal disposal by the transporter “on the name of direct co-processing” .
- Difficulty in Tracking

PRE-PROCESSING FACILITY- WHY??

- Pre-processing Facility can cater to the “Need of the day”
- PPF is universally adopted and has been a proven approach
- It is present in India since last 7-8 years
- It is “proven” that large amount of waste can be pre-processed and converted into acceptable, uniform quality of fuel.



GEPIL's EXPERIENCE IN PRE-PROCESSING

- Producing 10,000-12000 TPM of Alternate Fuel (AF) every month.
- Five Operational Pre-processing Facility across India.
- Two Pre-processing facilities are in Project stage.
- Closely working with reputed Cement companies.

WASTE HANDLED

SECTORS	WASTE TYPE
Chemical	<ul style="list-style-type: none">• Distillation Residue• Process Waste• Spent Carbon• ETP Sludge• Chemical Sludge
Agro Chemicals	<ul style="list-style-type: none">• Process Residue• Distillation Residue• Tarry Waste• Off Specification Products
Drugs and Pharma	<ul style="list-style-type: none">• Spent Organic Solvent• Spent Mother Liquor• ETP Sludge
Textile	<ul style="list-style-type: none">• Chemical Sludge from waste water• Distillation Residue

WASTE HANDLED

SECTORS	WASTE TYPE
Petro-chemicals	<ul style="list-style-type: none">• Oily Sludge• Used Oil• Spent Catalyst• Cotton Waste• Spent Carbon• Oil Soaked Cotton
Auto	<ul style="list-style-type: none">• Phosphate Sludge• Chemical Sludge• Paint Sludge• Sealant Waste• ETP Sludge
Wind and Power	<ul style="list-style-type: none">• Resin Waste• Doughy material• Process Waste
Engineering	<ul style="list-style-type: none">• Cutting Waste• Oily Sludge• Grinding

MAJOR INDUSTRIES

Particulars	Nos.
Nos. of member Industries	Approx . 5000
Major Sectors	8
Nos. of Wastes	1250

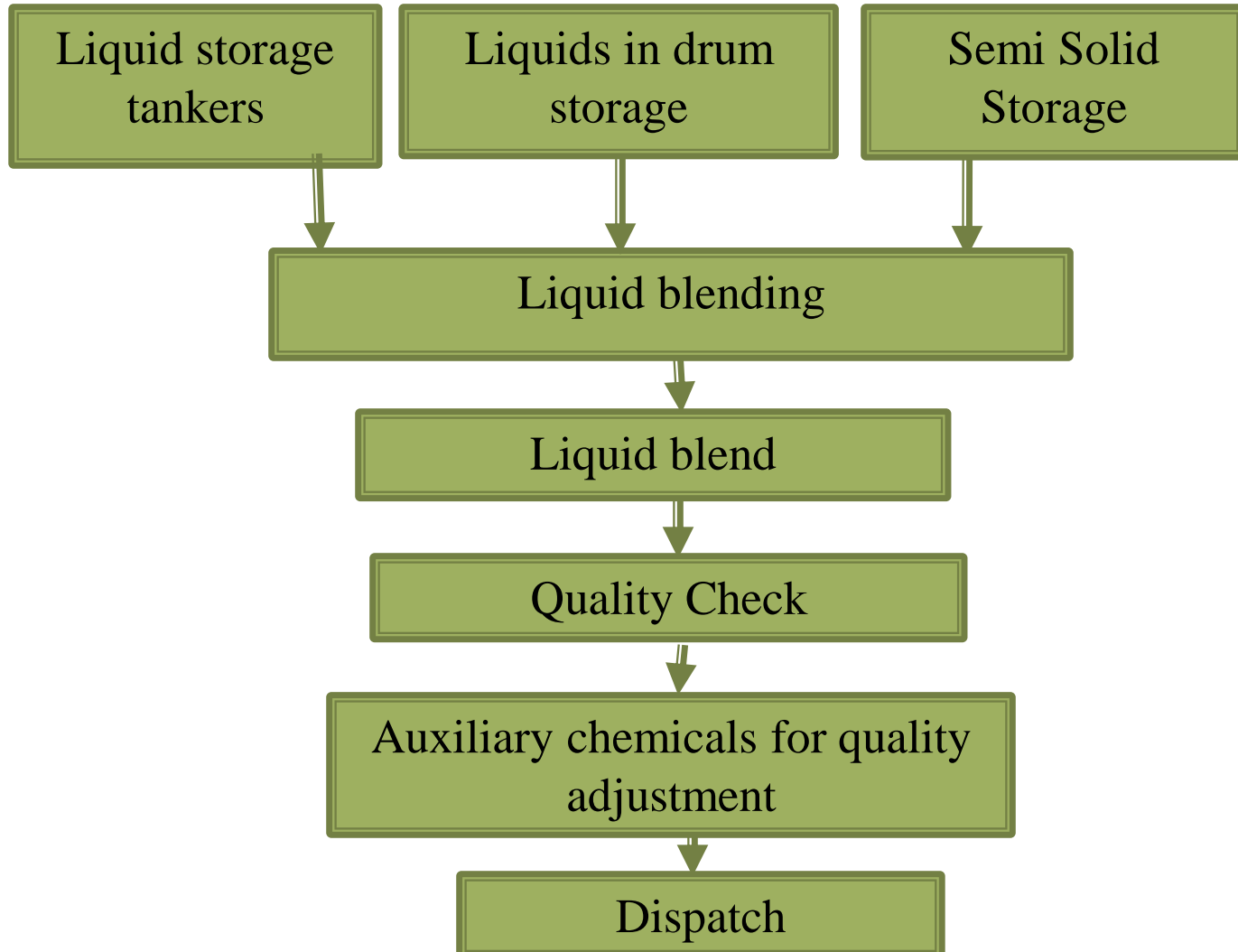
PRE-PROCESSING FACILITY (ENVIRONMENT SUSTAINABLE)

- No unit process and chemical reaction
- No High Temperature, high pressure operation
- Zero Waste Water Discharge facility
- Zero emission (only DG when operated)
- Zero Residue generation
- It generate the empty drums/containers and it shall be given to authorized drum recyclers.

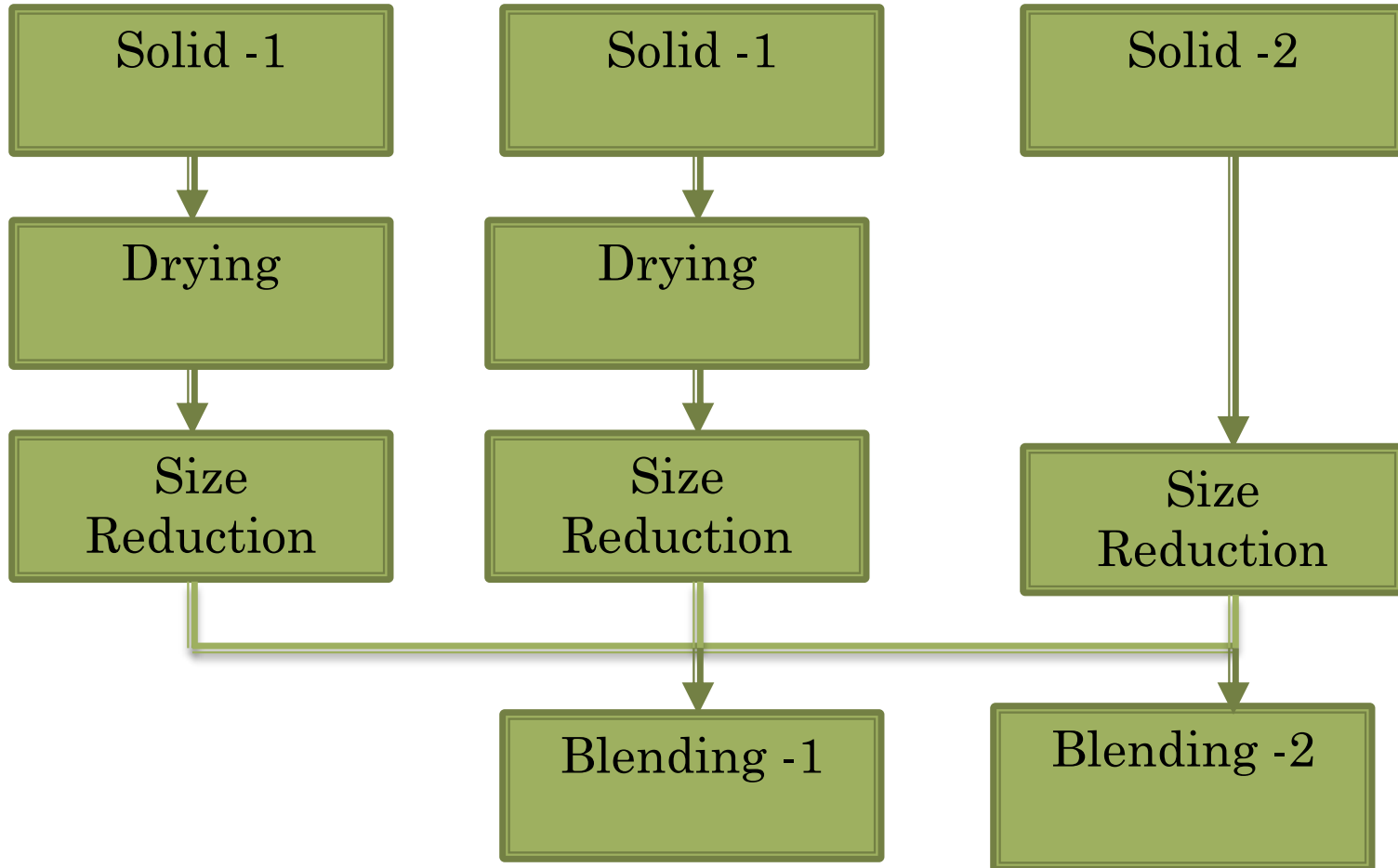
PROCESS

Process	Product
Liquid –Liquid Blending	Liquid Mix
Liquid- Semi Solid Blending	Liquid Mix
Semi Solid- Solid Blending	Solid Mix
Solid –Solid Blending	Solid Mix

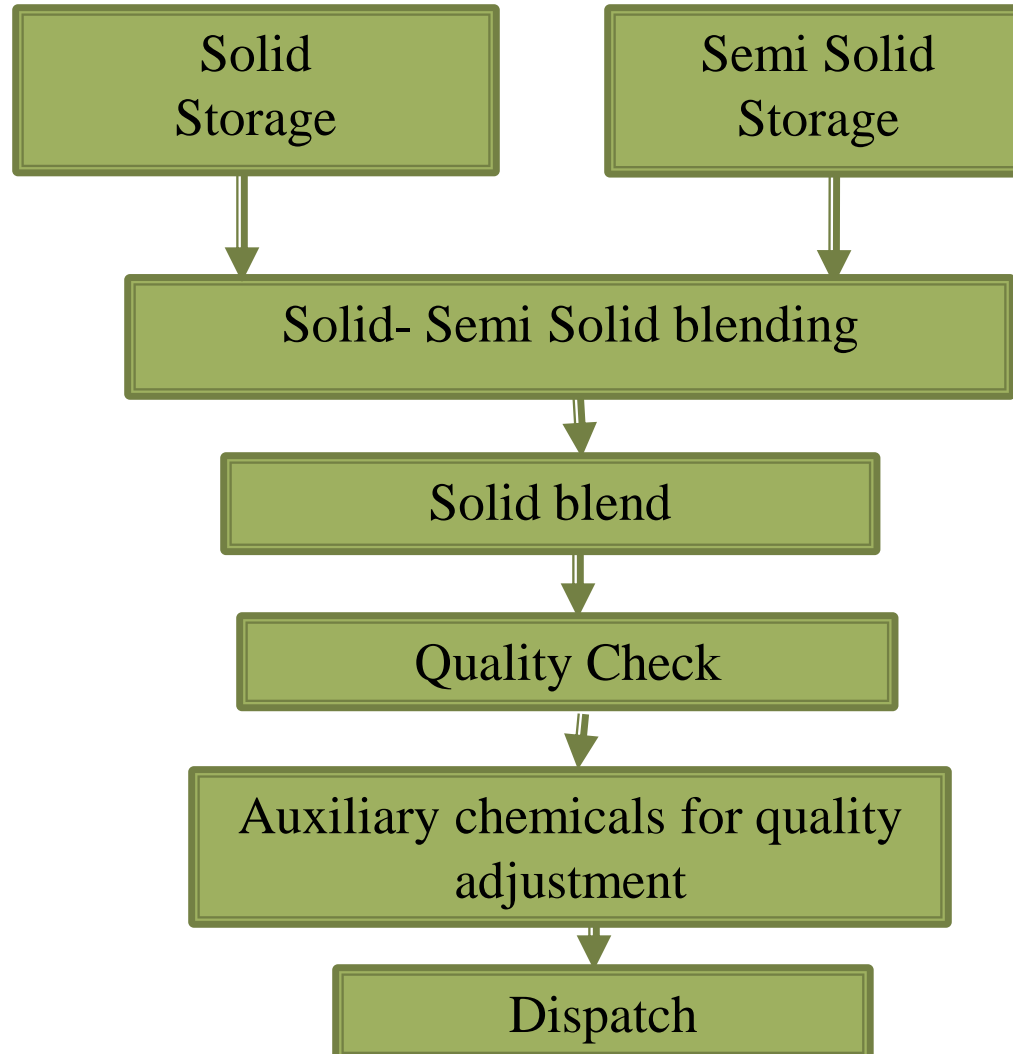
LIQUID PROCESSING



SOLID PROCESSING



SEMISOLID PROCESSING



FUNCTIONING OF PRE-PROCESSING FACILITY

The proposed functioning of the Waste Mix Processing Facility shall be carried out and explained in detail as below:

1. Finger Print Analyses and Waste Selection
2. Registration of Companies and their waste with WMPF facility
3. Waste Transportation
4. Waste Receipt and Quick Check analyses
5. Waste Storage
6. Recipe Preparation
7. Process
8. Quality check of alternate fuel
9. Dispatch of alternate fuel to cement industries

PRE-PROCESSING FACILITY



PRE-PROCESING FACILITY



PRE-PROCESSING FACILITY



TRANSPORTATION FACILITY



R & D AND LAB



WASTE ACCEPTENCE @ PPF

- All Wastes (Solid, Semi Solid, Liquid)
- Non Fumigative
- Any CV
- Chloride up to <20%

PRODUCTS OF PPF

Solid	Liquid
Free Flowing Powder	Free Flowing Liquid
Particle Size	Sp. Gravity and viscous
Color, CV, CL, Sulfur, Moisture etc.	Color, CV, CL, Sulfur, Moisture etc.
Transport in 1 Ton Jumbo bag	Transport in Tanker

PRODUCTS OF PPF

Parameters	Waste Mix - Solid	Waste Mix – Liquid
Calorific Value - As received basis (k Cal /kg)	3600+/-200	3600+/-200
Water (YO)	<20	<20
Flash Point - Deg Centigrade	-	>60 Degree C
Chloride (%)	<1.5-2	<1.5-2
Total Halogens (F +B+ I) (%)	<3.0	<3.0
S (%)	<1.5	<1.5
Viscosity (cSt)	NA	<100cSt
PCB/ PCT (ppm)	<50	<50
Heavy Metals (ppm)		
Hg	<10	<10
Cd+Tl+Hg	<100	<100
As+Co+Ni+Se+Te+Sb+CrtSn+Pb+V	<2500	<2500
pH	5 to 9	5 to 9
Sediments	NA	0.5%
Free Solids	NA	<3%
Ash	<30 %	<5 %

ADVANCES REQUIRED AT COPROCESSING W.R.T SAFETY & HEALTH

- Transportation
- Tracking of Hazardous Waste
- Safety & Health
- Pre processing Infrastructure

TRANSPORT OF ALTERNATE FUEL

DEDICATED TRUCKS



DEDICATED TANKERS



MAJOR TRASPORT FEATURES

- GPS Fitted and tracked by all stake holders, PCB, etc.
- Valves with control procedures (tanker).
- Covered under PLI policy.
- Training of Driver.
- Breather valves (tanker)
- Fire extinguishers.
- Completely complied with CPCB guidelines and Motor vehicles Act.

CHECKLIST FOR TRANSPORTATION

S No	Action Points
1	Whether PPEs - Organic Vapour Mask, Nitrile hand gloves, Safety Helmet, Safety shoes, Safety glass, protective clothing, high visible jacket available?
2	Valid of antidote available inside the vehicle
3	Whether the drivers are aware about how to use antidotes?
4	Driver aware about the antidote availability and use
5	Whether vehicle fitted with Spark Arrestor?
6	Condition of seat belt for driver and conductor side.
7	Test date due for fire Extinguisher.
8	Type of fire extinguishers (DCP/Foam type).
9	Whether all the first aid items with valid expiry date are available in first aid box.
10	Number of points sealed applied on tankers at GEPIL.
11	Whether the keys are send at SCP for unlocking.
12	Whether Manifest at three location as per norms painted.
13	Pollution Under Control Certificate (PUCC).
14	Approval copy of vehicles from PCB is available in Vehicle.
15	Owner books copy is available.
16	Driver have valid license and he authorized to carry the hazardous Material.
17	Valid vehicle fit certificate is provided by RTO.
18	Valid Insurance copy of the vehicles are available. Whether the vehicles have valid permit?
19	Emergency Contact Numbers of GEPIL, Fire Station, Ambulance, Police - available at tanker and Driver made aware.
20	Compliance of Statutory requirement of CMVR-99, MVA-14 (2), CMVR 134, CMVR 132, 134 and 137

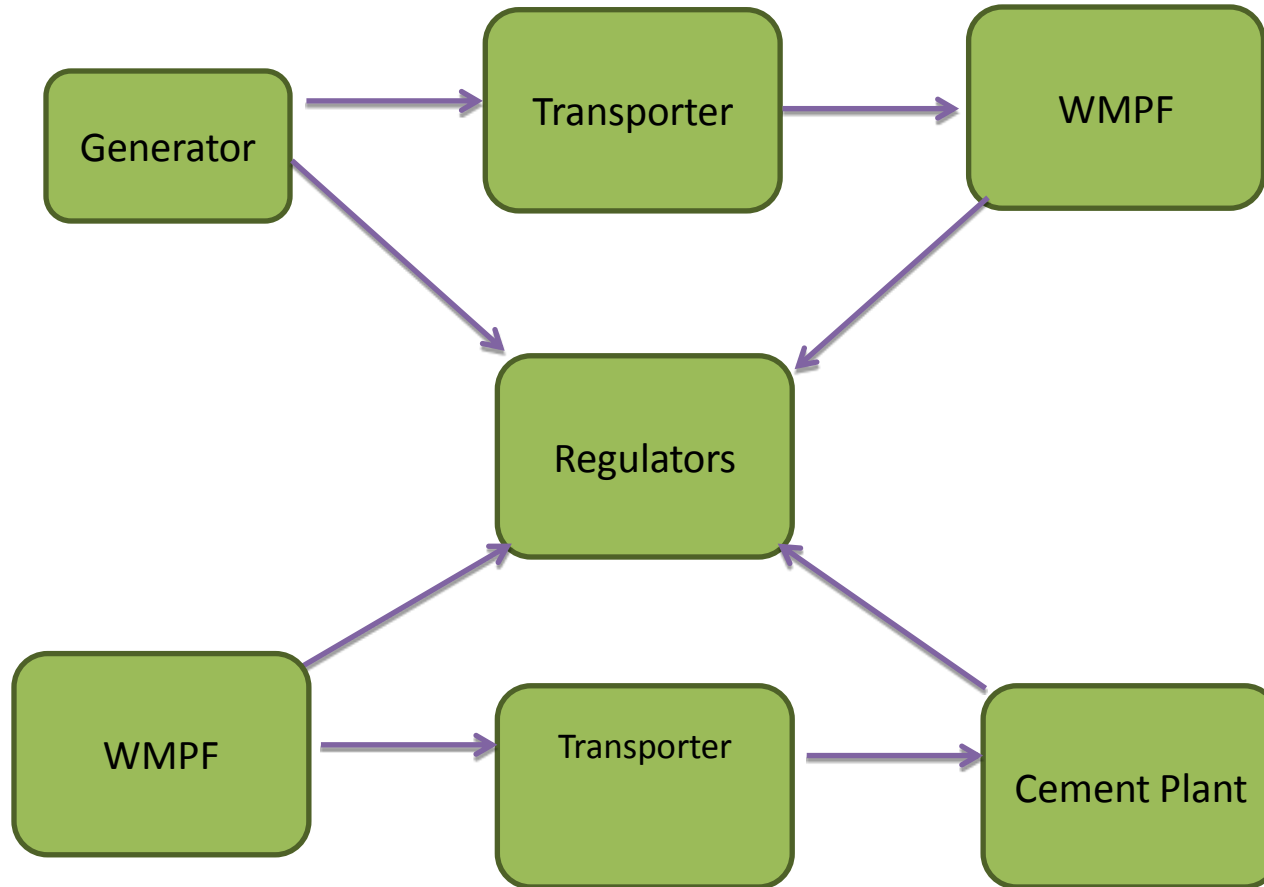
CHECKLIST FOR TRANSPORTATION

S No	Action Points
21	Vehicle Permit as per Central Govt. Motor Act 1988
22	Test Certificate of the material tested at GEPIL lab
23	Copy of Pollution control boards available
24	Availability of TREM Card
25	Whether driver is trained on TREM cards
26	Defined transport route, Tracking Mechanism in place - GPRS/ Check at identified halts/ nodal points
27	Whether seals valves and connections are airtight
28	Whether there is any leakage of chemical from the tanker
29	Spill response and Emergency Plan known and in place
30	Drivers trained on handling waste in case of emergency like leakage, fire etc.
31	Instruction class taken in Hindi & Local Languages
32	Break condition
33	Wiper in working condition (Mandatory in rainy season)
34	Self starter condition
35	Head light condition
36	Side indicator condition
37	Drivers Side Rear View Mirror
38	Stopper
39	Brake Light
40	Back Horn
41	Side Indicator
42	Reverse light
43	Left Side Rear View Mirror
44	Back Light
45	Reverse Light
46	Tyre Condition Good / Average

TRACKING

It is extremely important
to avoid illegal
management of hazardous
waste

MANIFEST SYSTEM



TRACKING

- Many of the states are not able to cross check the hazardous waste tracking resulting in illegal management of hazardous waste.
- Dedicated transport in line with new rule.
- No middle Man /Agent
- Timely Submission of manifest
- Online hazardous waste tracking is must.
- Intimation to SPCB is just not enough. Authorization is must in line with New guidelines and process

ADVANCEMENT RELATED TO PPF

- All VOC generated areas and electric area are in isolation.
- Use of “Air line Respirator instead of cartridge masks.
- Use of “Heat and smoke Detectors along with fire alarm system.
- VOC Sensors.
- Zoning of the entire plant in red, yellow and green category.
- Storage and Process area isolation
- Advancement in material handling
 - Drum on pallets
 - Jumbo bag on pallets
 - No smell from drum or bag
 - Use of forklift and EOT crane for Unloading.

ADVANCEMENT RELATED TO PPF

- Passages all over the storage and process areas.
- Minimum storages (< 7 days).
- Q.C of each and every drum and lot wise Segregation.
- Control of “Odor and Smell” while storage and Unloading
 - Packing Condition
 - O.D.S
 - Extraction system
 - Isolations
- Waste Safety Data Sheet (W.S.D.S)
- No residue for Landfill and Incineration

THREAT TO CO-PROCESSING OF HAZARDOUS WASTE

- Illegal Management of Hazardous Waste
- Landfilling of organic hazardous waste
- Non/ Partially functioning of ETP/CETP
- Declaration of low Qty by Generators.
- Incomplete Infrastructure @ Cement Plants

SUGGESTIONS /VIEWS TO PROMOTE CO-PROCESSING OF HAZARDOUS WASTE

SUGGESTIONS /VIEWS TO PROMOTE CO-PROCESSING

- Stronger Vigil and monitoring on hazardous waste recyclers by PCB. E.g. solvent , Oil
- ETP /CETP / landfill
- Promote and Support “On line Tracking”
- Doing Co-processing with Proper and Complete Infrastructure
- “Authorization only to user” will Minimize illegal hazardous waste transport and disposal.
- Use of “Controlled quality” AF will ensure
 - No disturbance in production
 - No disturbance in handling
 - No disturbance in Environment and Compliance

SUGGESTIONS /VIEWS TO PROMOTE CO-PROCESSING

- Focus on other wastes as well because “supply of Hazardous Waste” is much lesser compared to need of cement plant.
 - RDF
 - Plastic Waste
 - Agriculture waste
- Avoid “Direct Co-processing” of difficult waste.
- Good Co-ordination between Generator –PPF –TSDF- Cement Companies.
- Review of list of hazardous waste permitted for Direct Co-processing

THANK YOU