Experience sharing from Pre-Processing facilities

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Co-processing

Is

Utilization of Wastes Materials

in
Cement Production

Co-processing of Wastes

- Industrial wastes
  - Hazardous wastes
    - Organic – as Fuels
    - Inorganic – as raw materials
  - Non Hazardous wastes
- Non Industrial Wastes
  - Domestic
  - Commercial
  - Agro based

Co-processing of Wastes

- **Step 1:** Co Processing of Industrial Hazardous wastes as Alternate Fuels
- **Step 2:** Co Processing of Industrial Non Hazardous wastes as Alternate Fuels
- **Step 3:** Co Processing of Industrial Hazardous wastes as Raw Materials
- **Step 4:** Co Processing of Industrial Non Hazardous as Raw Materials

Co-processing of Industrial Hazardous Wastes as Fuels-- CONCERNS

- Good Fuel Value
- The wastes are highly toxic
- High Cost of treatment and disposal
- In sufficient and inefficient Treatment Infrastructure
- Limited Enforcement
- Some wastes are Wrongly approved for disposal in Landfills

Co-processing of Industrial Hazardous Wastes as Raw Materials-- CONCERNS

- Competition with Landfill cost
- Shortage and/or non availability of Landfill
- Limitation of its use and transport economics
- Seasonal issues

Co-processing of Industrial Non Hazardous Wastes -- CONCERNS

- No Policy or Clarity on its management and therefore no regulatory mechanism
- High Volumes, low toxic
- Illegal Disposal and Public Nuisance
- Only commercial limitation

Co-processing and GEPIL

- **Bridge between Wastes Generators and Cement cos.**

Waste Generator-→GEPIL -→ Cement Cos.

Wastes -------→AFRF --→ Alternate Fuels
Alternate Resources

AFRF: Alternate Fuel and Resource Facility

Why AFRF/ Pre Processing Facility ??

- Most wastes are not directly suitable for co – processing
- Cement industries want consistent supply of "Wastes Materials" within "defined quality range"
- Un-certainity of availability and high investment need
- Procedural issue
- Technical and Safety issues

AFRF/ Pre-processing : Emerged Concept

- Objective: Consistent supply of large amount of hazardous wastes, within the acceptable range, for co-processing.
- AFRF collects, transports wastes from generators, process/prepare as alternate fuel and supply to cement cos. for co processing
- Input to co-processing shall be only three types of uniform characteristics
  - Solid Mix
  - Liquid Mix
- Emission quality and product quality need to be tested only for three wastes types.

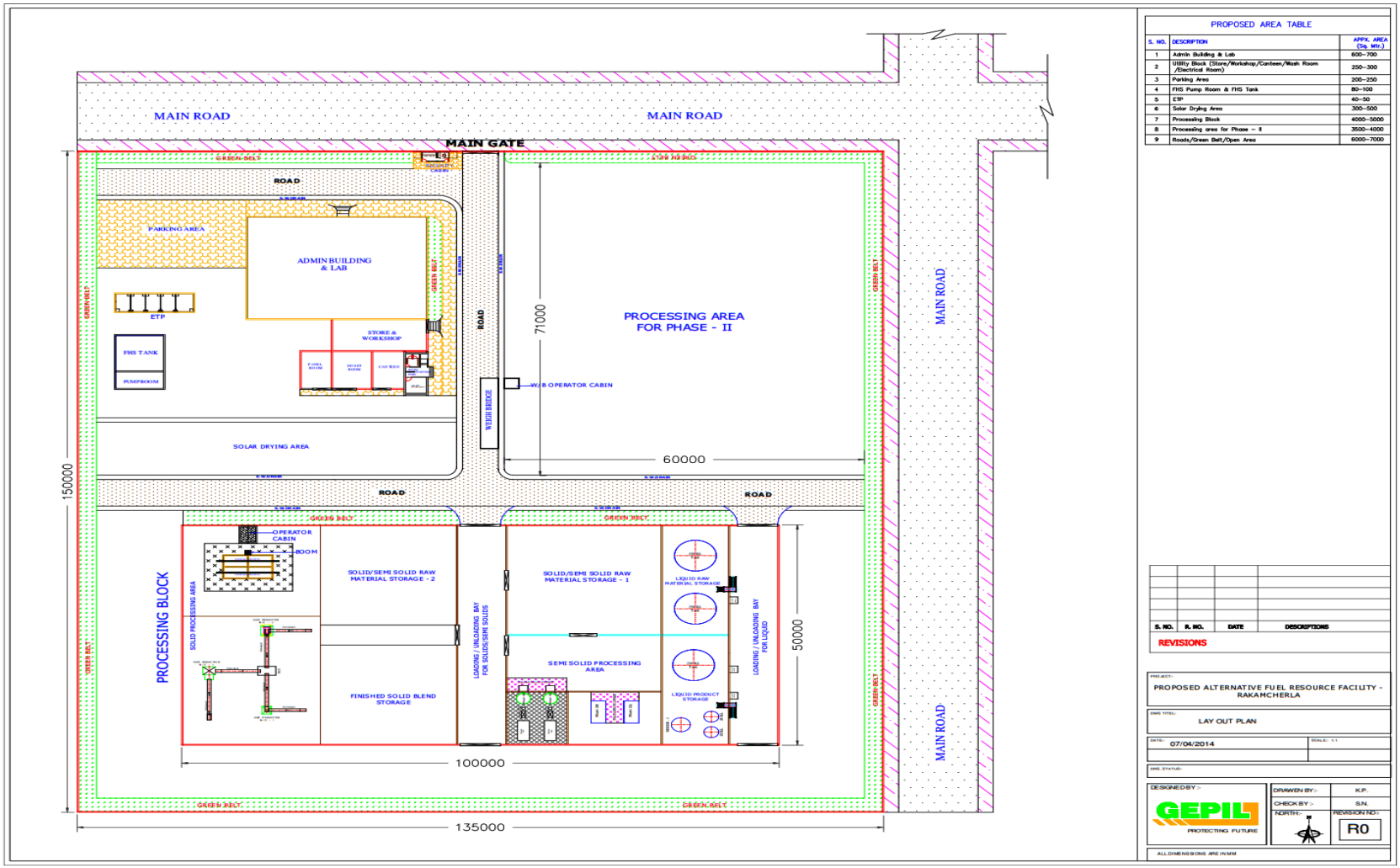
GEPIL and Pre Processing

- Focus on Producing Alternate Fuels from industrial wastes
- Conceptualized and Started in 2008
- Four operational facilities
- Supplying "Alternate Fuel" on Daily basis to cement cos.

GEPIL and Pre Processing

- Intend to extend coverage to neighboring states
- Intend to expand existing facilities for producing “Alternate Resources”
- Intend to develop few more facilities..

Typical Layout of Alternate Fuel Resource Facility



PROPOSED AREA TABLE

S. NO.	DESCRIPTION	APPX. AREA (Sq. Mtr.)
1	Admin Building & Lab	600–700
2	Utility Block (Store/Workshop/Canteen/Wash Room /Electrical Room)	250–300
3	Parking Area	200–250
4	FHS Pump Room & FHS Tank	80–100
5	ETP	40–50
6	Solar Drying Area	300–500
7	Processing Block	4000–5000
8	Processing area for Phase – II	3500–4000
9	Roads/Green Belt/Open Area	6000–7000

S. NO.	R. NO.	DATE	DESCRIPTIONS

REVISIONS

PROJECT: PROPOSED ALTERNATIVE FUEL RESOURCE FACILITY - RAKAMCHERLA

DWG TITLE: LAY OUT PLAN

DATE: 07/04/2014 SCALE: 1:1

DWG STATUS:

DESIGNED BY :- K.P.

DRAWN BY :- S.N.

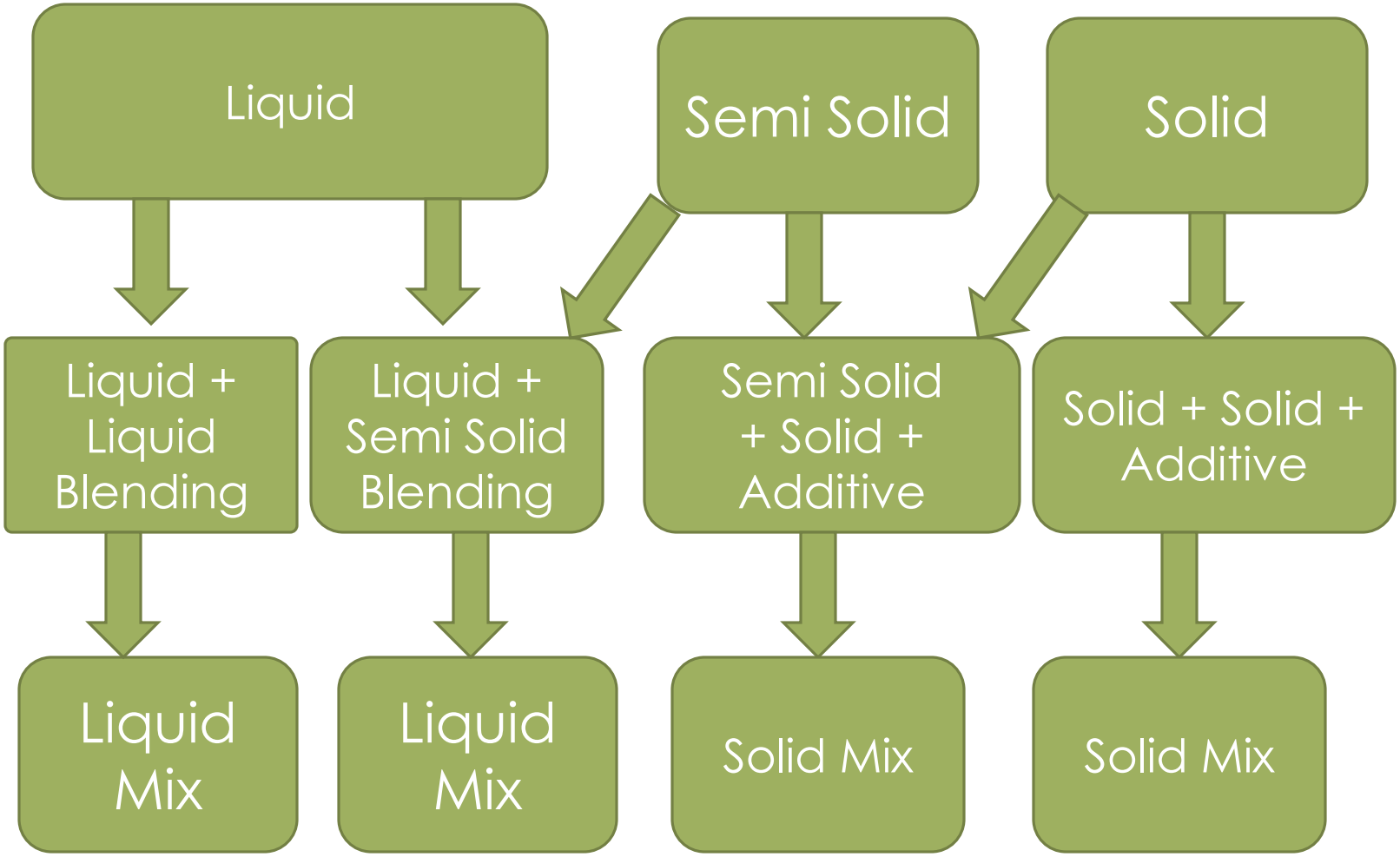
CHECK BY :- REVISION NO :- R0

NORTH :-

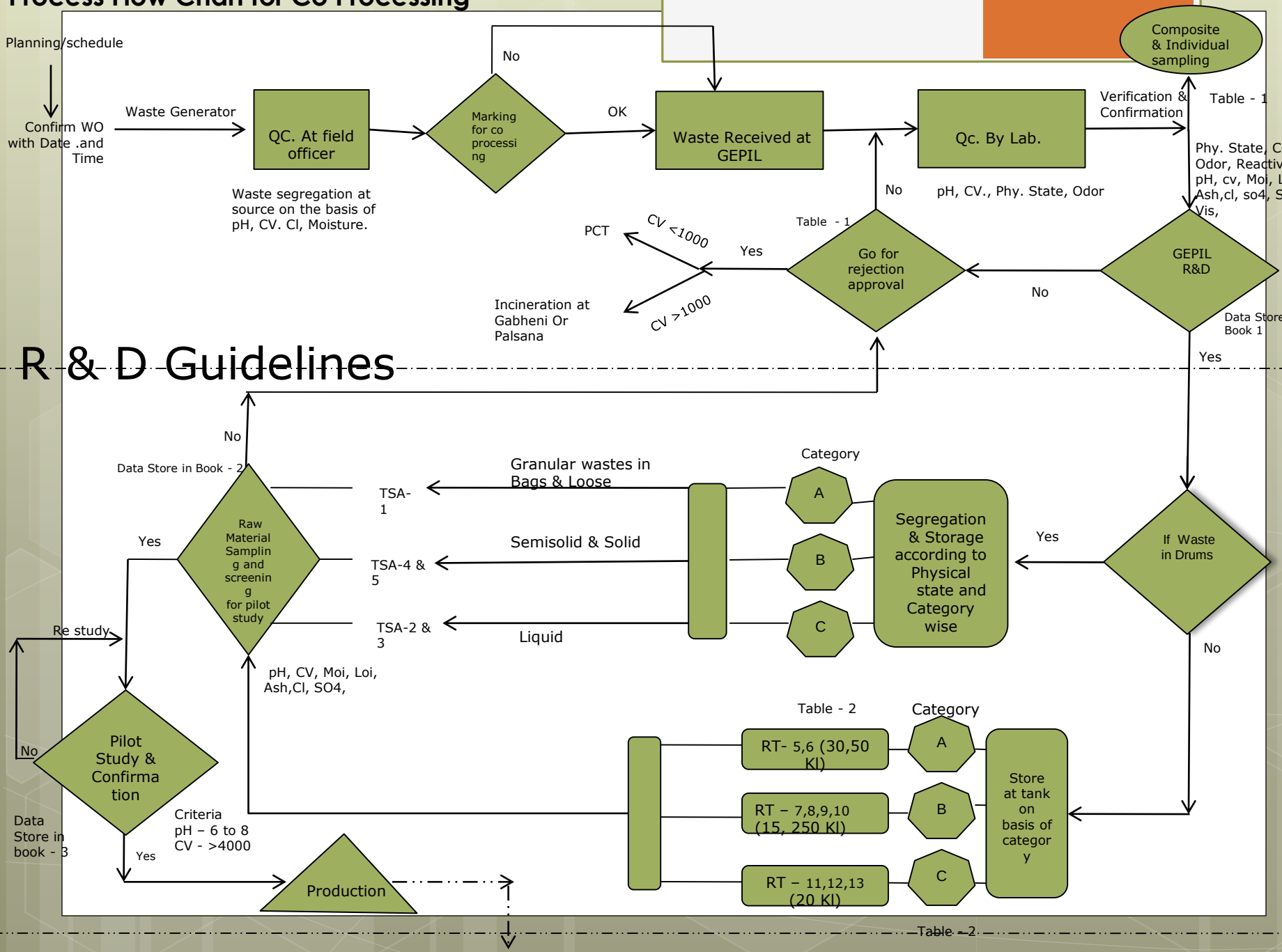
GEPIL PROTECTING FUTURE

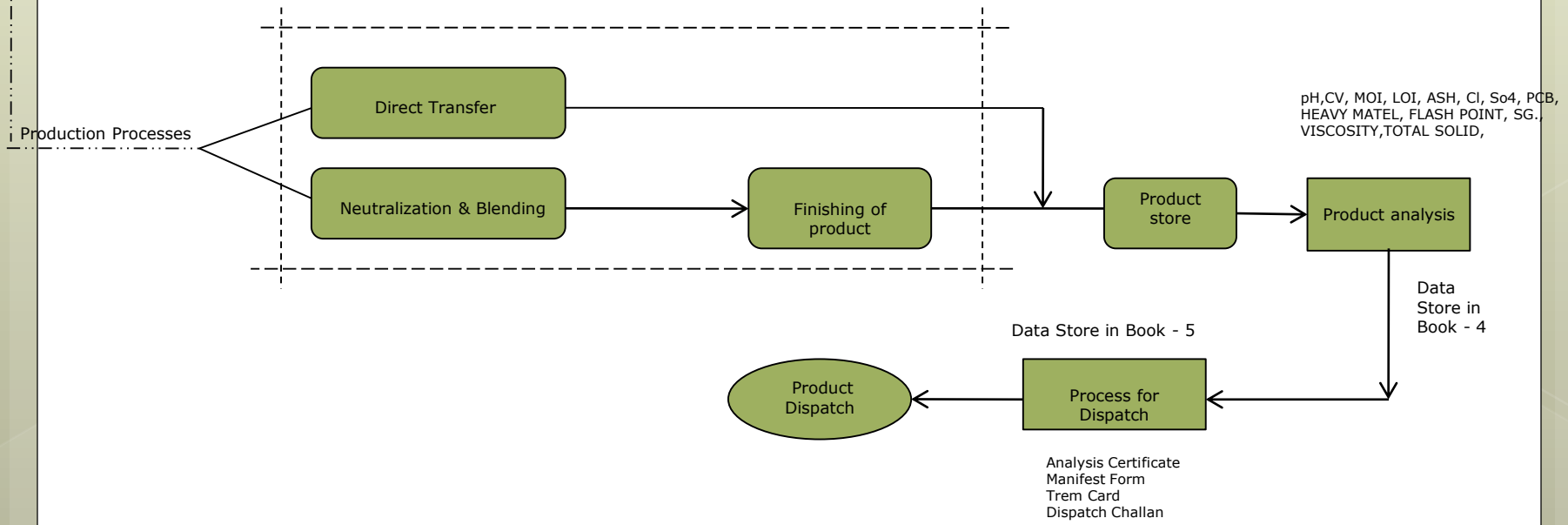
ALL DIMENSIONS ARE IN MM

Pre Processing of Hazardous Waste



Process Flow Chart for Co Processing





Rejection Level	Approval
1	R &D Co processing
2	GM (op)
3	Co -back office
4	Site Head

Table - 1

Category	Particulars
A	Direct Use for Co Processing
B	Goes to operation (Neutralization and Blending
C	High CV Waste

Table - 2

Typical Product Characteristics

Parameter	Liquid	Solid
Calorific Value (Kcal/Kg)	3500- 4000	3500- 4000
Water (%)	<20	<20
Flash Point (oC)	>60	NA
Chlorides (%)	< 2.0	<1.5
Total Halogens (%)	< 2.0	<1.5
Sulphur (%)	<1.5	<1.5
PCB/PCT(ppm)	<50	<50
Heavy Metals (%)	0.2 to 1.0	0.2 to 1.0
Heavy Metal (ppm) TI+CD V As Cr Hg CD +Ti+Hg As+Co+Ni+Se+Te+Sb+Cr+Sn+Pb+V	 <20 <100 <60 <400 <10 <100 <2500	 <20 <100 <60 <400 <10 <100 <25

Parameter	Liquid Mix	Solid Mix
Ph	5 to 9	5 to 9
Ash(%)	<5	<25
Packaging		Leak Proof, Double Lined HDPE Packing
Odour Toxicity	No Strong Odor NON Toxic	
Nature	Should not contain inerts like grit, rags, gloves, glass, stone, metal etc.	
Excluded waste types	-Radioactive (Nuclear) Wastes infectious waste -Entire batteries -Unknown or non specified wastes -Asbestos containing wastes -High concentration cyanide wastes -Mineral acids -Bio hazardous -Electronic metal scrap -Solvents & resins with probable polymerization.	

Pre-Processing Facility, Ranipet: A Case

Location	Plot No. S-60, SIPCOT Industrial estate, Phase-III, Ranipet Vellore District, Tamilnadu
Capacity	25000 TPA
Status	•Facility in operations • Regular supply to Cement
Acceptance Criteria	- Solid/ Liquid /Semi Solid - CV > 1500 - Chloride < 7% - S ≤ 5% - Moisture up to 40%
Types of Waste handled	As per Schedule-I of Hazardous Waste Management Rules

Pre-Processing Facility, Panoli –A Case

(operated by M/s RSPL)

Location	Plot N0. 223, GIDC Estate, Panoli, District Bharuch, Gujarat
Capacity	29000 TPA
Status	•Facility in operations •Regular supply of Alternate Fuel to Cement Industry
Acceptance Criteria	- Solid/ Liquid /Semi Solid - CV > 1500 - Chloride ≥ 6% - S ≤ 5% - Moisture up to 40%
Types of Waste handled	As per Schedule-I of Hazardous Waste Management Rules

Photographs of AFRF Facility

Plant Building

Plant Building

Photographs of AFRF Facility

Loading/Unloading Area

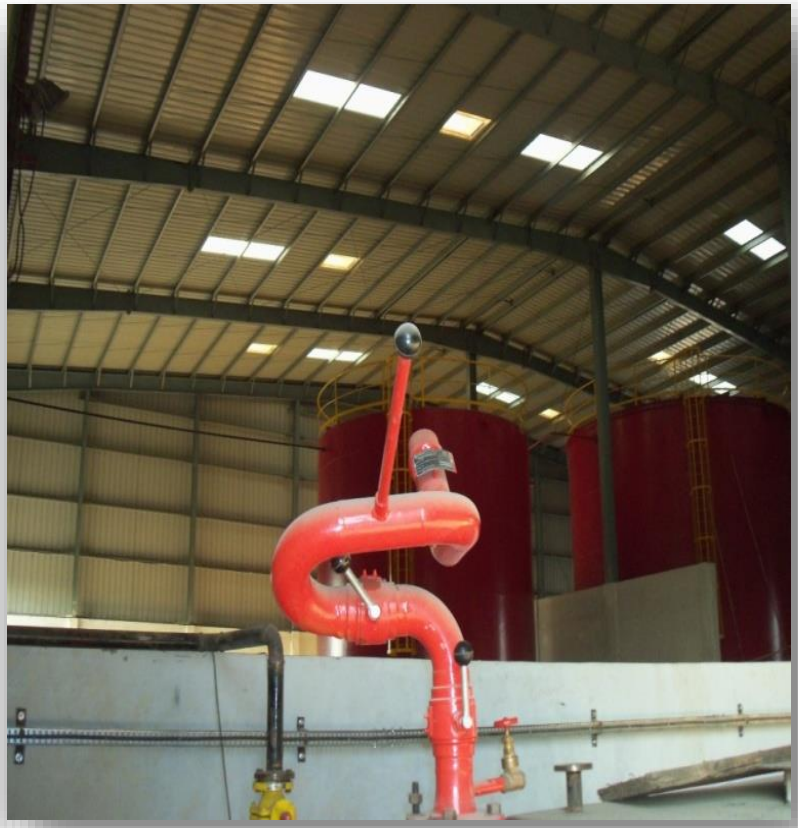
Liquid Storage Facility

Exothermic reaction vessel at AFRF plant

Photographs of AFRF Facility

Solid Processing Area

Fire Hydrant System



Photographs of AFRF Facility

Overview of Facility -Haryana

Intermediate Storage-Haryana

Transportation Facility

Laboratory Facility -Panoli

WET LAB

SEMI WET LAB

DRY LAB

Photographs of AFRF Facility

Lab & RD of Haryana

Lab & RD of Ranipet

Experience and Issues related to Co-processing

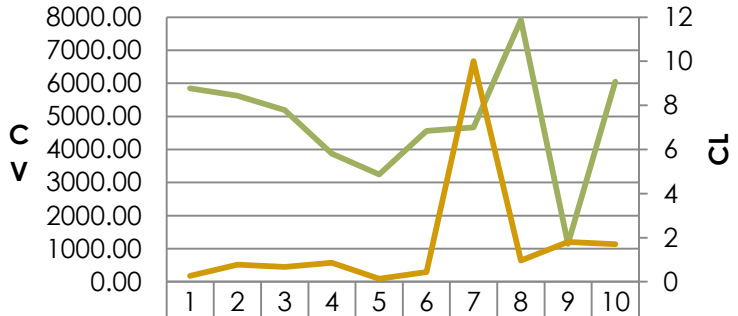
- Techno Legal Issues
- Operational Issues
- Market related Issues
- Logistic Issues

Techno Legal Issues

- Permitting based on waste category
- Organic wastes being permitted for Landfill/ Stabilization- solidification.
- Policy for Non Hazardous Industrial wastes
- Trans-boundary Permissions
- Reporting and Tracking

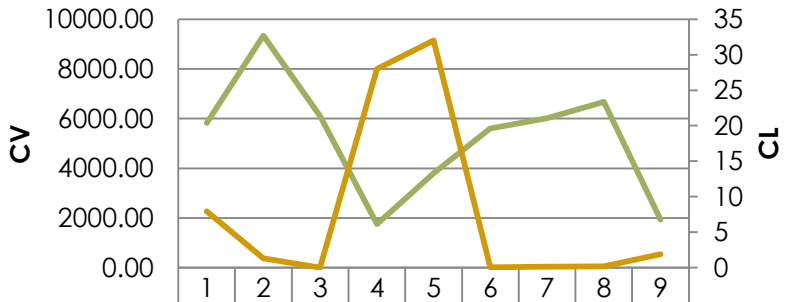
Variation of Characteristics of different waste being generated

Paint Sludge



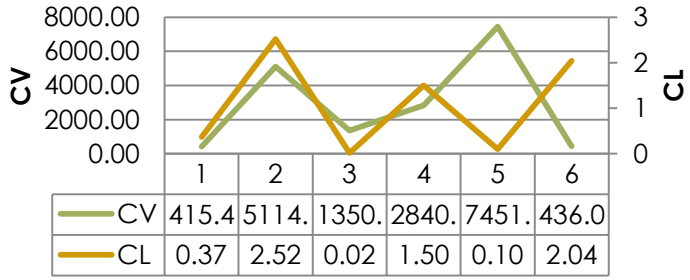
	1	2	3	4	5	6	7	8	9	10
CV	585	562	518	387	324	455	467	792	114	604
CL	0.3	0.8	0.7	0.9	0.1	0.4	10	1	1.8	1.7

Distilation Residue



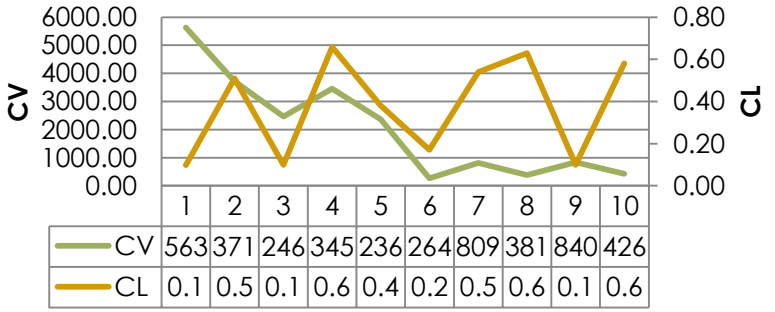
	1	2	3	4	5	6	7	8	9
CV	582	933	610	175	379	560	601	667	193
CL	7.9	1.3	0.0	28	32	0.1	0.2	0.2	1.9

Spent Carbon



	1	2	3	4	5	6
CV	415.4	5114.	1350.	2840.	7451.	436.0
CL	0.37	2.52	0.02	1.50	0.10	2.04

ETP Sludge



	1	2	3	4	5	6	7	8	9	10
CV	563	371	246	345	236	264	809	381	840	426
CL	0.1	0.5	0.1	0.6	0.4	0.2	0.5	0.6	0.1	0.6

Market Related Issues

- "Lot many Promises and No actions" resulting in

  -- stockpiles
  -- Lowering credibility of Co processing
  -- Disturbed cost economics

- High Expectation by Regulatory Agencies

Operational issues

- Quality of Alternate Fuel
- Change of Fuel/raw materials and feasibility of co processing
- Commitment of Generators
- Health and Safety Concerns

THANK YOU

AND

HAPPY DIWALI