Occupational Health and Safety Plan

Banka BioLoo Limited

FRP Unit

Mallapur, Hyderabad

Chapter 1 – Introduction

1.0 Responsibility

Banka BioLoo Limited (BBL) is committed to provide a safe and healthy working environment to its employees, and comply with all regulations for the preservation of the environment of the territory it operates in, during the course of its operations. BBL is committed to prevent the wastage of natural resources and minimize any hazardous impact of the development, production, use and disposal of any of its products and services on the ecological environment. BBL, as a responsible corporate citizen, considers its obligation to maintain highest standards of the environmental management and ensure, for all its employees, consultants, contractors and customers, a safe and healthy working environment, free from occupational injury and diseases.

BBL and its members shall pursue high standards of safety, health and environmental management as an integral part of efficient management, ensuring that all business decisions are taken after considering the safety, health and environmental implications. BBL has established an FRP (fiber-reinforced plastic) items manufacturing facility at Industrial Development Area (IDA) Mallapur in Hyderabad. The FRP bio-toilets and bio-digester tanks are manufactured, supplied and installed across India.

In this chapter, we attempt to address the issues related to risk, health, and safety for workers in the FRP unit. The essential materials used in FRP processing are glass reinforcement, resin, accelerators, catalysts, mould release agents, fillers, pigments and cleaning agents. These materials can pose some hazards to people at the workplace and the environment, if the materials and FRP construction is not carried out and managed correctly. Bio-digesters made of FRP are strong, robust, leak-proof and long-lasting.

2.0 OHS Committee

BBL have constituted an Occupational Health & Safety (OHS) Committee, with the employees of the Company as members, include the senior management. The OHS Committee is responsible for ensuring safe and healthy environment, and meets at regular intervals. For effective monitoring and observance of OHS, the committee may form sub-committees. The OHS Committee shall, inter-alia, be responsible for following:

Compliance with all legislative requirements pertaining to OHS as minimum standard, and wherever appropriate, institute additional measures for OHS.

2.1 Responsibilities of OHS Committee

- Exemplary performance in Occupational, Health & Safety.
- Framing of guidelines for OHS in sync with this policy.
- Review and revision of guidelines for OHS, whenever required.
- Dissemination of information regarding OHS amongst members and promoting awareness of OHS by organizing inter-department, inter-unit competitions and contests.

Chapter 2- Activities at FRP Unit

Activities to be carried out in FRP Unit for manufacturing FRP bio-digester tanks and toilets includes the following steps:

- Cleaning and preparation of mould
- Application of gel coat
- Preparation of raw materials
- FRP casting (hand layup process)
- Curing process
- De-moulding
- Partition and pipe fittings
- Top cover bonding process

All these steps mentioned above can be briefly discussed as follows:

- **Cleaning and Preparation of Mould**

Pass a spatula over the mould surface to remove remains of resin (to prevent the parts from sticking). Use the spatula in perfect condition (with the straight edge and without nicks). Check the mould surface and remove any possible point of resin (with spatula). Do not scratch the mould; take care with the corners of the spatula.
Apply wax polish and release agent PVA (polyvinyl alcohol) for cleaning and maintenance of moulds

Safety (same for all below processes)
Wear safety mask, hand gloves, goggles, industrial shoes

- **Application of Gel Coat**

Apply Pigment mixed gel coat on entire mould after first coat, wait for 30 minutes curing, and apply two coats; Put masking tape on to delimit the areas where gel coat must not be applied. These areas of damp laminates.

- **Preparation of Raw Materials**

Prepare raw materials (chopped mat 450 GSM; woven rowing mat 610 GSM and UD mat 1200 GSM): cut the fabric to required size.
Prepare liquid raw materials (ISO resin or GP resin mix 4% of accelerator if temperature at 40° C, if temperature above 40° C then mix 2% accelerator).

- **FRP Casting (Hand Layup Process)**

Put mat on mould surface, apply catalyst mixed resin by roller or brush
Damp the FRP mat one by one to required thickness of laminate

- **Curing Process**

In the curing process, maintain cycle time, if the temperature of the laminates is below 20° C, put heater it may be necessary to length the curing cycle.

- **De-moulding**

Check that the temperature of the FRP bio-tank / toilet is less than 60° C.
De-mould the tank flange part with Teflon wedges and airs cumberers; NEVER de-mould if laminate not curing.

- **Partition and Pipe Fittings**

Assemble the partition chambers with PVC pipe and L bend required size. The outlet pipe should be 4 inches down from top cover and each partition distance at 30% volume of tank.

- **Top Cover Bonding Process**

Cutting and dimming of top cover before bonding with privation of inlet point, gas vent pipe on top cover bonding, using a structural adhesive (polestar resin glue) on tank flange. This is one of the last assembly processes of the bio-tank.

Chapter 3 – Possible Hazards in FRP Unit

Risk is a probability that can cause damage to life, health and / or the environment. Risk can occur as a result of the hazard. Hazard is an inherent property of a substance, agent, and source of energy or situation having potential of causing undesirable consequences. The following two methods of hazard identification have been used:

- Identification of major hazards based on Manufacture, Storage, and Import of Hazardous Chemicals Rules, 1989 Government of India, as amended till date.
- Primary Hazard Analysis

The following are the various hazards considered during different phases of the project i.e. construction and operation phase.

3.1 Process Hazards: Hazards during the manufacturing process could be:

- Health risk to workers arising from inhalation of dusts and absorption of chemicals
- Fire or explosion risk from the resins and solvents used and vapours generated
- Fire or explosion risk from dust generated during grinding, sanding and in finishing stages
- Fire risk from spontaneous combustion of waste materials
- Explosion risk from mixing different chemicals together without referring and adhering to manufacturer's specific instructions

3.2 Hazards of Materials Used in Fibreglassing

The essential materials used in fibre-reinforced plastics processing are glass reinforcement, resin, accelerators, catalysts, mould release agents, fillers, pigments and cleaning agents. These materials can cause significant hazards. Material Safety Data Sheets (MSDS) of all materials to be used is made available at the workplace. Reference is made to the vendor's MSDS and the product labels before they are used. Safety precautions specified on the MSDS and the product labels are adhered to.

General materials used are as follows:

Glass Reinforcement

Glass reinforcement is available as roving, chopped strand and woven mat.

Resins and Gel Coats

Epoxy resins, commonly used for chemical resistance and in specialised composite areas e.g. aerospace.

Polyester resins and vinyl ester resins: The most commonly used resins in FRP industry. Unsaturated polyester and vinyl ester resins evolve styrene monomer vapour during lay-up and during initial curing.

Accelerators and Promoters

- Cobalt Solutions

- Dimethylaniline (DMA)

Catalysts and Curing Agents

- Methyl ethyl ketone peroxide (MEKP) and peroxides unsaturated polyester resins and vinyl ester resins are cured by the action of catalysts, which are normally organic peroxides - the most common being (MEKP)

- Incorrect proportion mixing with resin can generate a fireball
- Polyamine and polyamide hardeners are used to cure epoxy resins
- Polyurethane curing agents: These are polyfunctional isocyanates such as methylene diisocyanate (MDI) and toluene diisocyanate (TDI)

3.3 Hazards from Lightening

To protect the facility from lightening, following measures are taken:

- Making sure that building is grounded
- Every conductive path, such as water, gas, sewer, structural steel, electrical etc. that enters the building is bonded at the perimeter to the ground system
- Provision of an isolation protection through insulating barrier to electrical conduction

3.4 Accidental Hazards

Different accidental hazards associated with FRP operation activities are:

- Fire hazards
- Electrical hazards
- Slips, trips, and falls at work, and
- Biological hazards

3.4.1 Fire Hazards

Accidental fires due to electrical short circuit represent minor hazards. Special precautions are taken for electrical fitting and appliances used. Sources of ignition for fire hazards are direct flames, heat radiation and electric spark.

Safety Measures for Fire Hazards

- Matches, cigarettes, etc. within the production premises are prohibited; strict no smoking is followed in the work area and chemical storage areas.
- Styrene, acetone and MEK are volatile, flammable solvents; strict fire precautions are observed.
- Dust produced during grinding is flammable – meticulous housekeeping is essential. Surfaces are kept clean.
- Promoters and catalysts will react violently and spontaneously. The promoter is stored, decanted or added at a point remote from the catalyst. Add promoter to resin and mix, and then add catalyst.
- Catalyst (MEKP) may cause spontaneous combustion with organic material such as rag. Cleaning rag is disposed of under water in a 'wet bin'.
- In all work areas, identify the nearest fire extinguisher prior to commencing work.

3.4.2 Electrical Hazards

Poor electrical installations and faulty electrical appliances can lead to fires which may also cause death or injury to workers. Hazards involved with electrical network are:

- Contact with live parts causing shock and burns
- Faults which could cause fires

Safety Measures for Electrical Hazards

- Ensure safety of electrical installation and its maintenance
- Provision of safe and suitable equipment
- Provision of safety device
- Carry out preventive maintenance

3.4.3 Slips Trips and Falls at Work

Slips and trips are the most common cause of fatal injuries as well as non-fatal major injuries. The hazards related to slip and trips at work can be reduced through good housekeeping as well as health and safety arrangements.

Safety Measures for Slips, Trips and Falls at Work

The risks associated with slip and trip hazards are reduced by avoid spillages in workplace, especially on uneven floors, and trailing cables, and by maintaining good housekeeping. However, for further reduction in the slips and trips, following measures are also followed:

- Safety railing / grills, and safety stairs are provided, wherever applicable
- Safety operating procedure are followed for chemical handling, and doing regular maintenance work

3.4.4 Biological Hazards

The workers in the FRP facilities are prone to following biological hazards through handling and direct contact with chemicals present in the facility.

Safety Measures for Biological Hazards (Infection and Illness)

- Employees understand the risks through proper instruction, training and supervision, there is no any direct contact with chemicals
- Provisions and use of suitable personal protective measures
- Provision of adequate welfare and sanitation facilities as well as first-aid measures considering the possible contamination
- Provision of separate eating facilities to avoid food poisoning
- Effective arrangement for monitoring health of staff

Chapter 4 - General Preventive Measures

4.1 Personal Protective Equipment

The workers are provided necessary personal protective equipment, depending upon the type and nature of work they are handling. They are provided secure and clean place to store the personal protective equipment (PPE) given to them.

A list of personal protective equipment for safety purpose includes:

- Face shields / goggles / safety glasses
- Gloves
- Rubber / gum boots
- Protective clothing / apron
- Respirators
- Dust masks / nose masks
- Helmets

4.2 Training

The workers are trained properly for appropriate use of personal protective equipment provided to them. They are also trained for, when to use which kind of PPE and the right method to use. The workers are informed periodically about health risks they potentially face at the work place and safety measures to be taken.

4.3 First Aid During Emergencies

General principles to be employed during designing of first-aid program for this facility are:

- There is at least one worker in every shift, who has received approved first aid training. He is offered follow-up and refresher courses periodically to update his knowledge.
- All workers should have knowledge of technique of cardiopulmonary resuscitation (CPR) and appropriate use of it.
- Emergency showers and eye-baths are situated close to the site of any potentially hazardous work process.
- First aid box is provided and workers are trained in emergency first aid procedures for any accident or chemical exposure.
- Telephone number, in case for medical assistance and ambulances, is prominently displayed in the work place and a telephone must be available for use in case of emergency.

- There is an emergency response plan (ERP), in which individuals are assigned to perform certain tasks.

4.4 Health Surveillance

Health surveillance or medical monitoring consists of periodic health examination of a worker by a doctor, nurse, or health worker, in order to detect any health effects of a chemical. Medical monitoring is useful for assessing the effectiveness of measures implemented to control chemical exposure. Health surveillance also includes blood and urine testing, eye check-up, in addition to general health.

Special health surveillance is done for all personnel working with polyurethane resins and associated additives (isocyanate exposure) as follows:

1. Maintaining an occupational and medical history of the worker
2. Conducting pre-employment medical and half-yearly check-ups, which include:
    i. Completion of a standard respiratory questionnaire
    ii. Physical examination of respiratory system and skin
    iii. Standard respiratory function tests

Exposure to solvents and substances, which are readily absorbed through the skin may not be detected by air monitoring or take into account the rate of respiration of the worker or the individual response to the inhaled substance. Repeated or prolonged skin exposure to solvents may result in chronic irritant dermatitis.

4.5 Safety Signages

To ensure the health and safety of workers and visitors, there are safety signs and signals, in and around plant premises. The use of illuminated signals, hand and acoustic signals and marking of the chemicals and hazardous materials, along with the electric power stations in the facility in different colours is implemented.

4.6 Alarm System

An effective alarm system will direct the operator's attention towards the plant conditions requiring timely assessment or action. The alarm system will:

- Alert, inform and guide the operators, allowing them to diagnose problems, and keep the process within its safe envelope.

- Prevent unnecessary emergency shutdown
- Present the operator with useful and relevant alarms
- Allow enough time for the operator to respond
- Use prioritization to highlight the critical alarms

4.7 Permit to Work System

A permit-to-work system is a formal written system used to control certain types of work that are potentially hazardous. A permit-to-work is a document which specifies the work to be done and the precautions to be taken. It forms an essential part of safe systems of work for many maintenance activities. It allows working to start only after safe procedures have been defined and provides a clear record that all foreseeable hazards have been considered, and necessary precautionary measures ensured.

It is needed when maintenance work can only be carried out if normal safeguards are dropped or when new hazards are introduced by the work. e.g. entry to the underground tank. The system should have included the following points:

- Clear identification of person authorized for particular types of jobs
- Clear identification of responsibility of person specifying necessary precautions
- Clarity about its design to allow for use in unusual circumstances
- Does the person issuing permit have sufficient knowledge concerning the hazards and precautions associated with the work?
- Does the permit clearly identify the work to be done and hazards associated with it?
- Is there a detailed work method statement for complicated tasks?
- Does the system require the removal of hazards and, where this is not reasonably practicable, effective control?
- Does the permit contain clear rules about how the job should be controlled or abandoned in the case of an emergency?

The permit-to-work will help communication between everyone involved in the particular task/ job. Separate permits are designed for different tasks, and that sufficient emphasis is given to the particular hazards present and required precautionary measures.

4.8 Housekeeping

A clean and tidy work place is maintained at all times. Particular attention is given to:

- Ensure work areas are of sound construction suited to the process, kept free of all obstructions and are cleaned regularly
- Provide one ‘wet’ and one ‘dry’ waste bin
- No more than a day’s or a shift’s supply of materials is kept at the work area
- Put all waste (off cuts, process waste, excess packaging material etc) into the appropriate and labelled bins
- Immediately clean up spilled chemicals and put the contaminated cleaning rags into the appropriate ‘wet’ bin
- Do not use previously contaminated rags and do not use the same cleaning rag for more than one type of chemical
- The rags used to clean spillages of promoter and accelerators are placed in a ‘wet’ bin quite separate from the rags used to clean up spillages of catalysts
- At no time must the promoter contaminated rags be allowed to come into contact with the catalyst contaminated rags
- Empty all bins at the end of each shift or as soon as full, whichever earlier. The two types of bins shall remain separate throughout the disposal stage, be emptied into separate transport bins and be disposed of appropriately, by licensed carriers.
- Thoroughly clean all working areas at the end of each shift
- Ensure that there is clear access to exits, fire extinguishers and fire-fighting equipment at all times
- Ensure that there is good air space around stored materials and components
- Inspect exhaust ducting, rafters, and projections etc., weekly and clean way dust deposits.
- Inspect concealed spaces and keep clear of wastes
- Maintain lights in good condition
- Hand-mix resins in a well-ventilated area and only mix the necessary amount.

4.9 Safety Showers

Safety showers and eye washing facilities are provided in close proximity to the work place where chemicals are handled and used. If contamination occurs, irrigate the eyes and/or wash the contaminated area for at least 20 minutes under the shower. Remove contaminated clothing in the shower and wash underlying skin. In the case of peroxide contact, the eye should be flushed continuously until medical treatment is available.

Where it is not practicable to provide an eye wash facility, portable eye wash bottles shall be provided. Care must be taken to ensure they are protected from contamination such as dust and that the solution is changed at the interval recommended by the supplier.

4.10 Ventilation and Personal Protection

Carefully planned and designed work place ventilation system, using fans, ducting, hoods and booths, and scrubbers and filters if contaminants are to be removed before air is discharged, are essential to ensure vapours are removed or reduced to levels that do not pose a hazard to workers. Booth ventilation is the most desirable form of effective vapour control as it ensures the hazardous activity is restricted to a designated area and it prevents the rest of the area from being contaminated.

Fans are used to blow vapours away from the workers' breathing zone. Personnel working inside a mould, tank or enclosed structure can result in high exposure to styrene or other harmful vapours. Essential requirement in ventilation of confined spaces is that fresh air must be supplied to move from behind or above the operator.

When mixing and handling resins, curing agents and solvents, the safety precautions specified in the MSDS for each component is be adhered to. Suitable protective clothing, gloves, goggles, respiratory devices and barrier creams are used where required as per the Operation Manual / SOP.

It is extremely important to avoid inhaling vapours and to avoid skin and eye contact with chemicals. Ensure that appropriate PPE are used.

Safety Measures

In conjunction with the work practices specified in Storage and Handling of Hazardous Materials and Ventilation and Personnel Protection the following steps to be followed:

- Eye and skin protection to be worn when decanting and using resin, promoters, catalyst and cleaning solvents
- Decant and mix under a fume hood or a well-ventilated work area
- Clean up all spills immediately
- Use safety cans for solvents
- Ensure there is adequate forced ventilation of work area
- Avoid inhalation of vapours when cleaning tools. Use as little solvent as possible, work outside or in a fume hood and complete the task as quickly as possible. Containers filled with cleaning agent must be covered.
- To avoid inhalation of dust when grinding, use company approved dust masks
- Frequent hand washing is essential, especially prior to meal breaks
- Recommended to use hot running water, soap and a nailbrush
- Work clothing to be changed daily
- In addition, smoking, eating, drinking and storing food in work areas is forbidden

4.11 First Aid Measures for Contact with FRP Materials

First aid treatment following contact with FRP materials is in accordance with the manufacturers supplied MSDS. As a guide typical treatment is as follows:

Hazardous Substance	First Aid Treatment	
Glass fibres	**Eye**	Irrigate carefully with plenty of water.
	Skin	Wash skin with plenty of water.
Resins Accelerators Catalysts Cleaning Agents	**Eye**	• Immediately and carefully, irrigate with plenty of water. Ensure irrigation under eyelids by occasionally lifting them. Do NOT try to remove contact lenses unless trained. • Seek immediate medical assistance.
	Skin	• Immediately wash affected area with soap and water. Remove contaminated clothing and footwear. Ensure contaminated clothing is thoroughly washed before using again. • Seek immediate medical assistance.
	Inhaled	• Remove from exposure into fresh air. • If breathing abnormally, give respiratory aid. • Keep warm, comfortable and at rest. • Seek immediate medical assistance.
	Ingested	• Wash mouth out with water and give water to drink as slowly as can be tolerated (3-5 glasses), provided the victim is completely conscious. • Do NOT induce vomiting. • Lean victim forward.

		• Keep warm, comfortable and at rest. • Seek urgent medical assistance

4.12 Safe Working Practices

4.12.1 Storage and Handling of Hazardous Materials

- All hazardous materials to be stored and handled in accordance with product labelling and the manufacturer's MSDS.
- Keep all containers tightly closed, away from sources of ignition and store in a cool, dry dark and well-ventilated area.
- Keep away from direct sunlight and heat and segregate incompatible materials.
- Emptied containers retain vapour and product residue and may therefore present explosive vapour and irritant / toxic material hazards. Observe all safeguards on labels and in the MSDS until container is cleaned, reconditioned or destroyed.
- Do not cut or weld on or near emptied containers.
- Disposal shall be in accordance with applicable TSPCB (Telangana State Pollution Control Board) regulations

4.13 Waste Disposal

The use of polymer materials has simplified the modern life. At the same time, the extensive use of polymer materials in every walk of life have caused serious waste problems. The handling of increased amount of polymer waste is a serious issue globally and is also a cause of depletion of petroleum resources, which are an essential requirement for the mankind.

4.13.1 Collection, Segregation and Transportation

At present, no system exists with municipal bodies for collection, segregation and transportation of all kind of plastic waste, including FRP/polycarbonate plastic waste. However, as per Rule "6" of the Plastic Waste Management Rules, 2016:

1. Every local body shall be responsible for development and setting up of infrastructure for segregation, collection, storage, transportation, processing and disposal of the plastic waste, either on its own or by engaging agencies or producers.

1.1 The local body shall be responsible for setting up, operationalisation and coordination of the waste management system and for performing the associated functions, namely:

(a) Ensure segregation, collection, storage, transportation, processing and disposal of plastic waste

(b) Ensure that no damage is caused to the environment during this process

(c) Ensure channelization of recyclable plastic waste fraction to recyclers

(d) Ensure processing and disposal on non-recyclable fraction of plastic waste in accordance with the guidelines issued by the Central Pollution Control Board, India

(e) Create awareness among all stakeholders about their responsibilities

(f) Engage civil societies or groups working with waste pickers and

(g) Ensure that open burning of plastic waste does not take place

2 The local body for setting up of system for plastic waste management shall seek assistance of producers and such system shall be set up within one year from the date of final publication of these rules in the Official Gazette of India.

3 The local body to frame bye-laws incorporating the provisions of these rules.

5.1.2 As per Rule 9(1) of the Plastic Waste Management Rules, 2016, the producers, within a period of six months from the date of publication of The Plastic Waste Management Rules, 2016 shall work out modalities for waste collection system based on extended producers responsibility and involving State Urban Development Departments, either individually or collectively, through their own distribution channel or through the local body concerned. In case of disposal of (sheet moulding compound) SMC / FRP waste etc. is carried out in cement kilns, the monitoring of air quality including dioxin/ furan shall be the responsibility of producers to monitor the air quality on regular basis or as the case may be.

5.2 Management/Disposal Options

The most deserved options are:

(i) Minimizing the waste generation

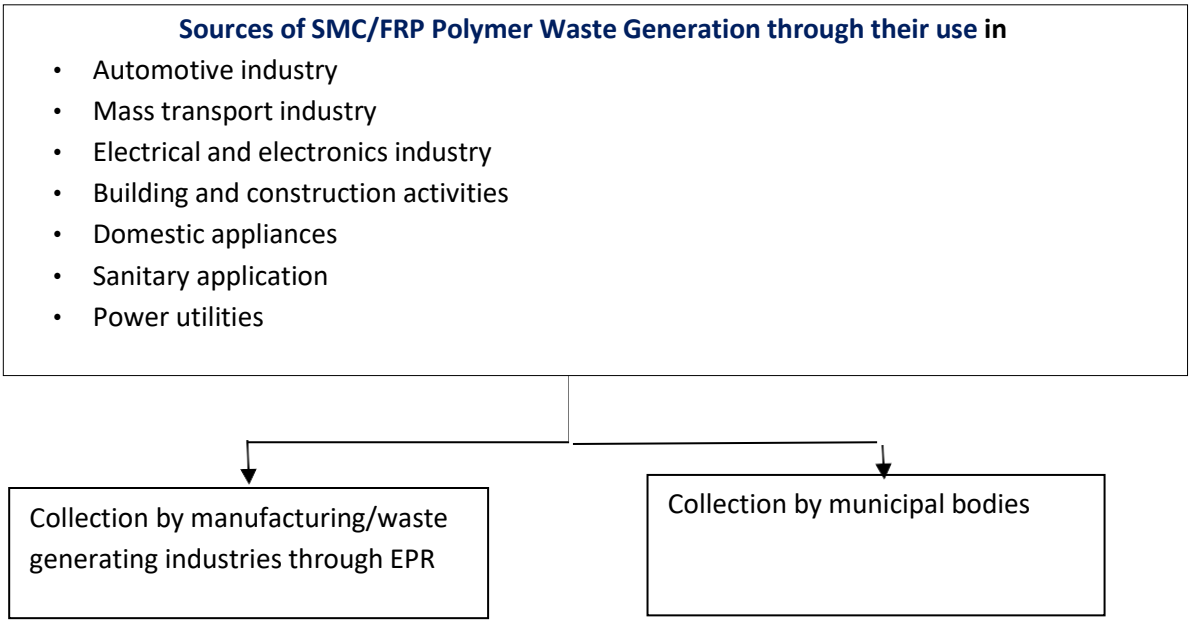
(ii) Co-processing in cement kilns

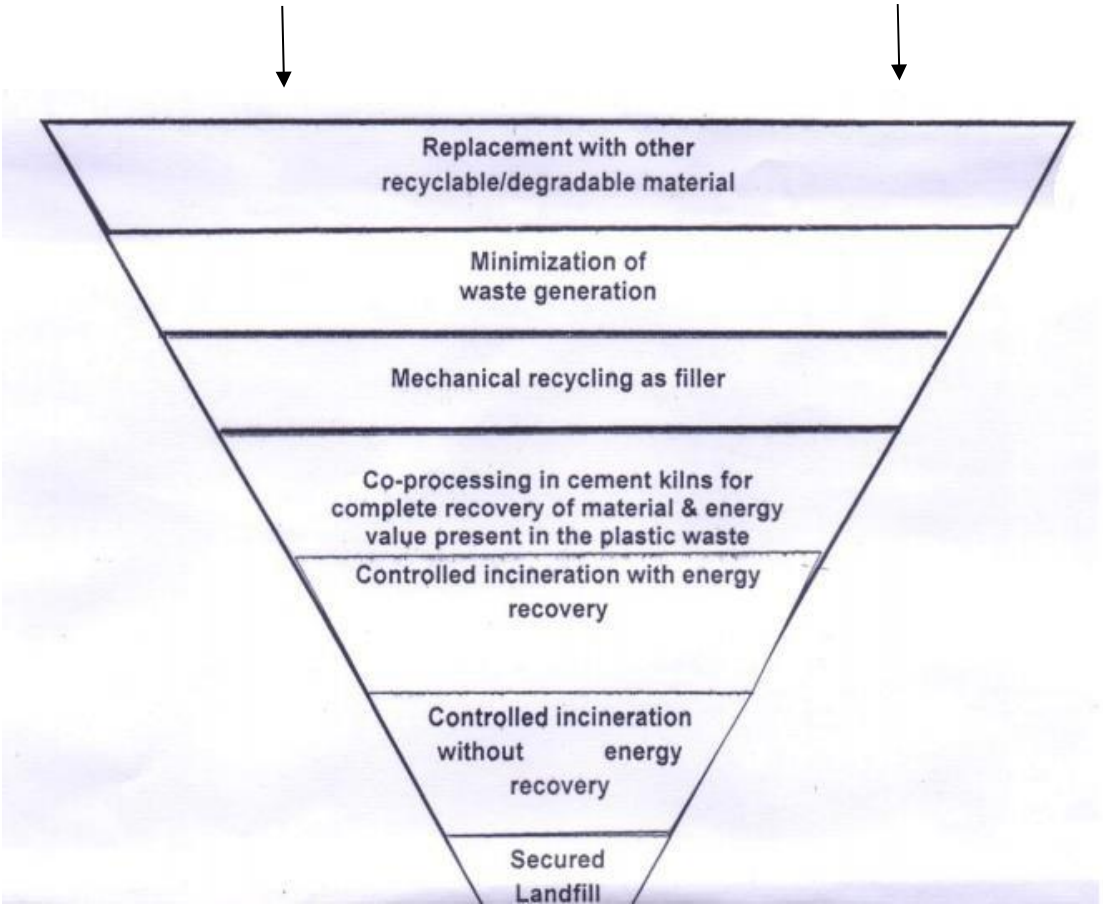
(iii) Disposal in secured landfills

(iv) Reuse of FRP generated scrap in FRP composites

Based on the various options practised globally for disposal of plastic waste, including SMC/FRP wastes and the waste management hierarchy, recommendation on collection and disposal of SMC/FRP wastes are illustrated below.

Figure – 1: Collection and Disposal of SMC/FRP Waste





5.2.1 Minimising Waste Generation

The most preferred option is minimization of use of SMC/FRP/polycarbonate polymer products and promoting use of alternate material, which could be easily recyclable/reusable/degradable.

5.2.2 Co-Processing of Thermosetting Polymer Waste in Cement Plants

Co-processing is a more environmentally-friendly and sustainable method of waste disposal, compared to land filling and incineration because of reduced emissions and no residue after the treatment. Co-processing refers to the use of waste materials in industrial processes as alternative fuels or raw material to recover energy and material from them. Due to the high temperature and long residence time in cement kiln, all types of wastes can be effectively disposed without any harmful emission.

As per the Basel Convention, variety of wastes including hazardous wastes, get disposed in an environmentally safe and sound manner through the technology of co-processing in cement kiln. Disposal of SMC / FRP wastes through co-processing is practised in many countries as a regular method for their environmentally sound disposal.

In India, also, the capability of disposing FRP in an environmentally sound manner has been demonstrated through a co-processing trial carried out by ACC Limited in their Madukkarai Cement Works in Tamil Nadu. The results of this trial have demonstrated that there is no untoward impact of

co-processing of FRP in the cement kiln on emissions or on the product quality. This trial was carried out at a thermal substitution rate (TSR) of 0.924%, which was reviewed by Central Pollution Control Board (CPCB) and permission to regularly co-process FRP waste in cement kiln at Madukkarai Cement Works was granted.

5.2.2.1 Pre-Requisites for Co-Processing FRP Polymer Waste in Cement Plants

Following should be considered as a prerequisite for permitting co-processing of SMC/ FRP wastes in cement plants.

a) The producers of thermoset plastic, major users such as industries, electricity authorities etc. in consultation with local authorities shall arrange to collect the SMC/FRP waste and handover to cement plants. They must maintain a record of quantity generated and handed over to cement plant.
b) The cement plant must maintain a record of quantity received and utilised by them.
c) The producers of SMC/FRP, major user like industries, electricity authority etc. shall assist the cement plants for establishment of required facilities for utilization of SMC/FRP, such as shredding, feeding system, safety measures as applicable for co-incineration, online emission monitoring for PM, SO_2 and NOx, and stack monitoring of heavy metals, dioxin and furans based on extended producers responsibility.

5.2.3 Secured Landfill

Secured landfill is another option that can be utilised for disposal of the thermoset waste. The experience has, however, demonstrated that the land utilised for the landfill purpose gets locked and the liability associated with this land, filled-up with materials tends to continue forever, besides the land remains unusable.

Most countries have stopped the practice of utilising landfill as the option for disposal of wastes. The cost of landfill is expected to keep on increasing over the time due to increase in land and fuel coils. Further, availability of land is a major issue in the cities/ towns, therefore, this method could be ranked as least preferred option. The producers of thermoset plastic - SMC/FRP boxes in collaboration with power utilities may also explore the possibility of establishing common secured landfills for disposal of thermoset waste including FRP etc.

Excess chemicals left over at the end of the job should be removed from site. BBL encourages all work on site that reduces wastes. Where possible recover or re-use all wastes, for example:

- Acetone waste can be reduced by distillation to recover the acetone for re-use
- Resin drums and containers may be suitable for recycling if they are sealed immediately after becoming empty.

5.3.3 Reuse of FRP Scrap

The FRP scraps that is generated at the plant will be supplied to FRP composite industries for further reuse of the FRP scrap. These FRP composites are used in FRP-based bitumen concrete.

All waste generated must be sent to its final destination. All waste must be disposed in accordance with TSPCB and/or CPCB regulations.

Banka BioLoo deploys a combination of the below, depending on what option is immediately available at a given point of time:

- Co-processing in cement kilns (scrap sent to cement plants if there's a truck going towards the cement plant)
- Disposal in secured landfills (scrap disposed through municipal-designated pickers)
- Reuse of FRP generated scrap in FRP composites (scrap sent to the respective composite units, when a vehicle is available for that)