

Training Manual for Self Help Groups/Area Level Federations/City Level Federations for **Operations and Maintenance of Material Recovery Facility**



Ministry of Housing
and Urban Affairs
Government of India

DAY-NULM
Deendayal Antyodaya Yojana
National Urban Livelihoods Mission



UMC
URBAN MANAGEMENT CENTRE

DISCLAIMER

This training material has been prepared by Urban Management Centre (UMC) in consultation with State Urban Development Agency (SUDA), Govt. of Odisha for providing training to members of Self Help Groups / Area Level Federations / City Level Federations for Operation & Maintenance of Material Recovery Facility. This training material has been prepared for the exclusive use and benefit of the SHG's and DAY-NULM functionaries. If any part of the report is reproduced or replicated, UMC and SUDA, Odisha shall be acknowledged.

In this manual, we will understand

Types of waste

What is waste cycle

What is a Material Recovery Facility (MRF)

Materials sorted at Material Recovery Facility

Role of the ULB in managing of a Material Recovery Facility

Role of SHG/ALF/CLF in managing a Material Recovery Facility

When to contact the ULB

Do's and Dont's at Material Recovery Facility

Safety practices to be adopted at Material Recovery Facility

Special Care during COVID – 19

THIS MANUAL HAS BEEN PREPARED FOR

Primary Audience: Members of Self Help Groups/Area Level Federations/City Level Federations

Secondary Audience: DAY-NULM functionaries, other Government and Non-Government personnel interested in understanding the functioning of a Material Recovery Facility.

TYPE OF TRAINING



Theory Duration



Practical Duration

DURATION

03:00
Hours

02:00
Hours

OBJECTIVE

OBJECTIVE OF THIS TRAINING

1. How to operate and maintain a MRF
2. To understand the roles and responsibilities of all the stakeholders involved –
ULB/SHG/ALF/CLF
3. When to contact the ULB in case of any issues in operations of the MRF
4. To sensitize the SHG members to take up O&M of MRF as means of livelihood

TYPES OF WASTE

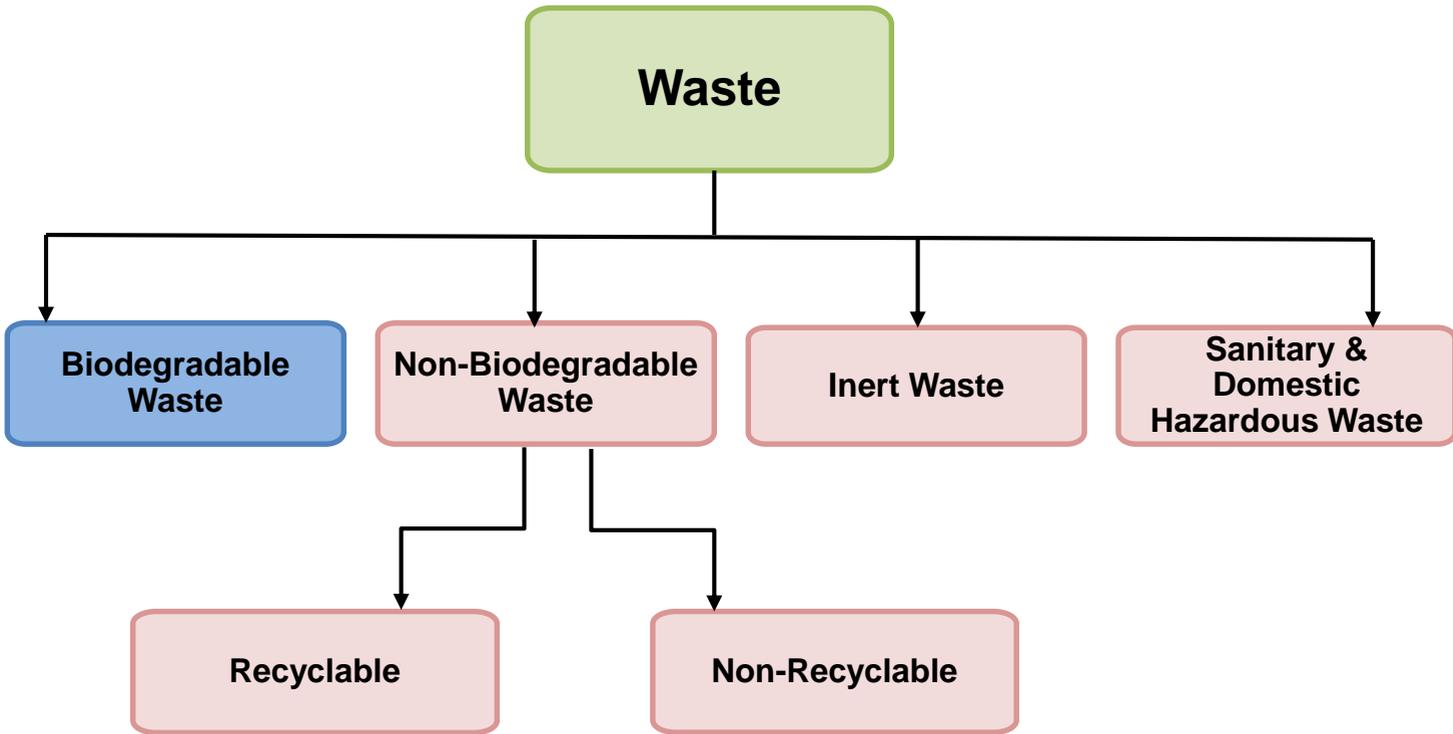
WHAT IS WASTE

Any material that is discarded because it has served its purpose is called WASTE

It is understood as “unwanted” or “useless” material



WHAT IS IN OUR WASTE



For the purpose of this manual, we will be focusing on Recyclable waste

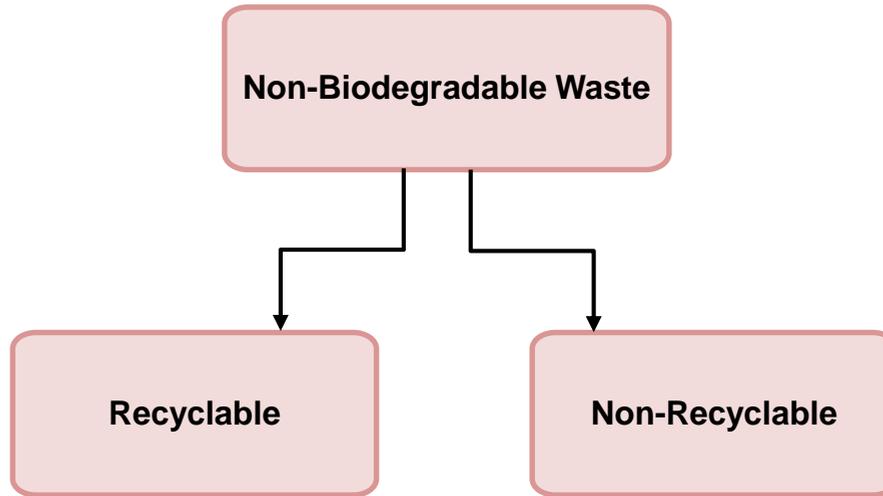
WHAT IS BIODEGRADABLE WASTE

Any organic material that can be degraded by micro-organisms into simpler stable compounds



WHAT IS NON-BIODEGRADABLE WASTE

Any waste that cannot be degraded by micro organisms into simpler stable compounds



For the purpose of this manual, we will be focusing on Recyclable waste

WHAT IS NON-BIODEGRADABLE WASTE

RECYCLABLE WASTE

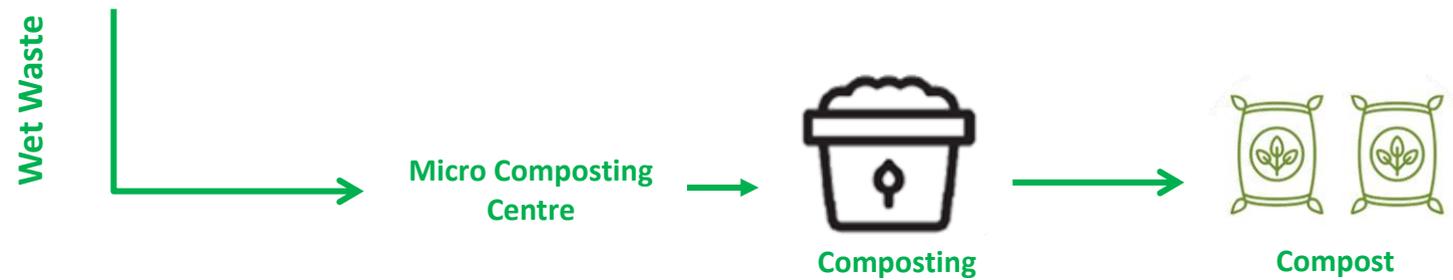


NON - RECYCLABLE WASTE



WHAT IS WASTE CYCLE

WHAT IS WASTE CYCLE



WHAT IS A MATERIAL RECOVERY FACILITY

WHAT IS A MATERIAL RECOVERY FACILITY

A Material Recovery facility is a facility where dry waste is sorted into different categories and sold to bulk waste buyers or Scrap dealers or Recyclers

Dry waste is received

Dry waste is sorted into different categories

Sorted waste is bundled & stored

Sold to bulk waste buyers



**MATERIALS SORTED AT
MATERIAL RECOVERY FACILITY**

MATERIALS SORTED AT MATERIAL RECOVERY FACILITY

PAPER



Glass



Leather items



Aluminum coated plastic



Wooden items



Cardboard

PLASTIC ITEMS (NON PVC)



Rubber



Thermocol



Non – ferrous metals – Copper, Lead, etc.



X – Ray Films



Jute bags

PLASTIC ITEMS (PVC)



Ferrous metals – Stainless steel, Cast iron



Aluminium coated paper



Medical waste



Clothes/Rugs



Batteries

ROLE OF ULB IN MANAGING A MATERIAL RECOVERY FACILITY

RESPONSIBILITIES OF THE URBAN LOCAL BODY

1. Collection and Transportation of waste to MRF

2. Provision of infrastructural facilities

3. Requirements at MRF

4. Personal health and provision of PPE

5. Linkage with bulk waste buyers

6. Disposal of inert waste

1. COLLECTION AND TRANSPORTATION OF WASTE TO MRF

- Collection and transportation of segregated waste to MRF
- Ensure dry waste is segregated



2. PROVISION OF INFRASTRUCTURAL FACILITIES

Infrastructure Requirement

- Provision of waste receiving area, waste sorting area, sorted waste storage area, packing/bundling machine, inert waste storage area
- Provision of toilets, changing room, office, power supply, drinking water
- Ensure that all facilities are in working conditions during handover
- Regular monitoring and maintenance of the infrastructure facilities



3. REQUIREMENTS AT MRF



Waste receiving area



Sorting area



Weighing Scale



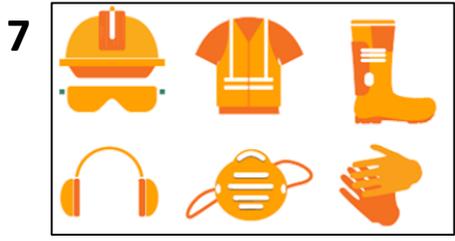
Sorted Waste storage area



Baling machine



Plastic shredding machine



Personal Protective Equipment

4. PERSONAL HEALTH AND PROVISION OF PPE

- Conduct regular health check up of the persons working at the MRF
- ULB shall provide the required PPE from time to time at their own cost
- Ensure usage and maintenance of PPE as per the directions
- Provision of first aid kit at the MRF

ULB to provide below mentioned trainings



Fire fighting



Record keeping



Personal hygiene



Usage & Maintenance of PPE



Regular Health check-up



RESPONSIBILITIES OF URBAN LOCAL BODY

5. LINKAGE WITH BULK WASTE BUYERS

- ULB to Develop linkages with probable bulk waste buyers or scrap dealers or recyclers
- Update price chart as per market rates



6. DISPOSAL OF INERT WASTE

RESPONSIBILITIES OF THE URBAN LOCAL BODY

ULB to collect and dispose the inert waste from the MRF daily



Storage of inert waste



Collection of inert waste



Disposal of inert waste

**ROLE OF SHG/ALF/CLF
IN MANAGING A
MATERIAL RECOVERY FACILITY**

RESPONSIBILITIES OF SHG/ALF/CLF

1. Unloading of incoming waste

2. Sorting of waste

3. Bundling and storage of waste

4. Weighing of waste

5. Selling of sorted waste to bulk waste buyers

6. Use of Personal Protective Equipment

7. Record Keeping

8. Regular cleaning of waste sorting area

9. Special care during COVID – 19

1. UNLOADING OF INCOMING WASTE

- Unload dry waste in the waste receiving area
- Weigh the incoming dry waste
- Remove wet/inert waste if any



2. SORTING OF WASTE

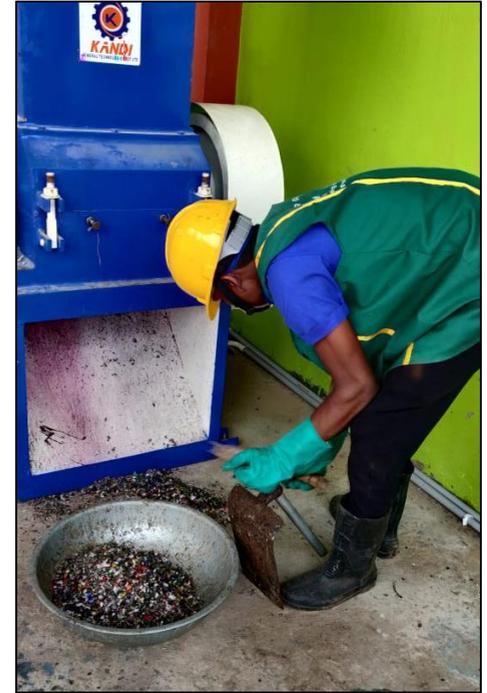
- Keep all the waste on the sorting platform
- Sort the waste into different categories like plastics, paper, cans or tins, tetra packs, rubber, etc.
- Put the sorted waste in respective storage area



2.1 SORTING OF WASTE

Shredding of plastic waste

- Use shredding machine to shred plastic waste
- Collect the shredded waste in a container



3. BUNDLING & STORAGE OF SORTED WASTE

Bale and pack the sorted waste in large bags or keep it bundled in the waste storage area



4. WEIGHING OF WASTE

- Weigh the bundled or packed waste daily and record it
- The sorted waste should be weighed at the MRF only



5. SELLING OF SORTED WASTE TO BULK WASTE BUYERS

Sell sorted waste to bulk waste buyers at pre decided rate

RECORD BOOK FOR SELLING AT MRF

MONTH:	NAME OF SHG/ALF/CLF:
Name of MRF:	

No	Name of Buyer / contact number	Date	Address	Articles Sold	Unit price	Total Kg	Total price	Signature

Name & Signature of SHG/ALF/CLF President	Name & Signature of SHG/ALF/CLF Secretary	Seal of SHG/ALF/CLF	Name and Signature of Plant Operator	Name and Signature of Team Leader handling MRF

6. MAINTAIN SAFETY AND PERSONAL HYGIENE

ROLES & RESPONSIBILITIES OF SHG/ALF/CLF

- Wear personal protective equipment before starting the work
- Maintain personal hygiene. Wash your hands and legs with soap before and after your daily work
- Regular maintenance of personal protective equipment
- Proper storage of PPE



BOOTS



MASK



HELMET



GLOVES



REFLECTIVE VEST



HANDWASHING



Always wear PPE

7. RECORD KEEPING

List of records to be maintained:

Sr. No	Name	Frequency	Responsibility
1.	Daily attendance register	Daily (shift wise)	SHG/ALF/CLF Leader and Plant Operator
2.	PPE Inspection Record	Every 15 days	SHG/ALF/CLF Leader and Plant Operator
3.	Category of dry waste for segregation	Everyday	SHG/ALF/CLF Leader and Plant Operator and Plant Operator
4.	Monthly waste deposited and sorted	Daily	SHG/ALF/CLF Leader and Plant Operator
5.	Record book for selling at MRF	Weekly/ fortnightly	SHG/ALF/CLF Leader and Plant Operator
6.	Monthly Meetings & Training Record	Monthly	SHG/ALF/CLF Leader and Plant Operator

7.1 RECORD KEEPING

DAILY ATTENDANCE REGISTER

MONTH:	NAME OF SHG/ALF/CLF:
Name of MRF:	
SHIFT 1 TIME:	SHIFT 2 TIME:

N o	Name	1	2	3	4	5	6	7	8	9	1 0	1 1	1 2	1 3	1 4	1 5	1 6	1 7	1 8	1 9	2 0	2 1	2 2	2 3	2 4	2 5	2 6	2 7	2 8	2 9	3 0	3 1	Remar ks
SHIFT 1																																	
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Each member shall mention the number of hours worked per day at the MRF. The team leader shall be responsible for finalizing the number of working hours daily by each member and shall be verified by the plant operator.

Name & Signature of SHG/ALF/CLF President	Name & Signature of SHG/ALF/CLF Secretary	Seal of SHG/ALF/CLF	Name and Signature of Plant Operator	Name and Signature of Team Leader handling MRF

ROLES & RESPONSIBILITIES OF SHG/ALF/CLF

7.2 RECORD KEEPING

PPE INSPECTION RECORD

MONTH:	NAME OF SHG/ALF/CLF:
NAME OF MRF:	DATE OF INSPECTION:
PERIOD OF INSPECTION From: dd/mm/yyyy to dd/mm/yyyy	NAME OF INSPECTING SUPERVISOR:

No	Name of Employee	Condition of the PPE [GOOD/DAMAGED] *					Remark for Replacement or Non-Usage
		Head Gear	Mask	Gloves	Apron/coat	Boots	
1							
2							
3							
4							
5							

* Condition of the PPE should be defined as per the below mentioned definition:

GOOD: The condition of the PPEs must be so that it can be used by the concerned beneficiary for over 15 days from the date of inspection.

DAMAGED: The PPE inspected is either damaged, torn or cannot be used for the next 15 days and need to be changed. In this case new PPE needs to be issued to the concerned beneficiary.

Name & Signature of Inspecting Supervisor	Name & Signature of SHG/ALF/CLF Member	Seal of SHG/ALF/CLF	Name and Signature of Plant Operator

CATEGORY WISE COST OF DRY WASTE FOR SEGREGATION

MONTH:	NAME OF SHG/ALF/CLF:
NAME OF MRF:	

No	List of Articles	Unit Price
1	Carton Box	
2	Mixed paper	
3	White paper	
4	Books	
5	News Paper	
6	Colour Plastic	
7	White Plastic	
8	Black Plastic	
9	Aluminum and Aluminum Tins	
10	Copper	
11	Iron	
12	CDs	
13	Toothbrush	
14	Saline Bottles	
15	Steel	

16	Mini Beer Bottles	
17	Large Beer bottles	
18	Strong Iron	
19	Liquor Bottles	
20	PET Bottles	
21	Plastic cans	
22	Plastic Packaging rope	
23	Glass	
24	Rubber sole/shoe sole	
25	Tetra packs	
26	Multilayer packaging	
27	Tin boxes	

Name & Signature of Team Leader	Name & Signature of Plant Operator

7.4 RECORD KEEPING

MONTHLY WASTE DEPOSITED AND SORTED

MONTHLY WASTE DEPOSITED AND SORTED																			
MONTH:																			
Name of MRF:																			
Ward no:	Agency	Vehicle no:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 - 31	Remarks
1																			
2																			
3																			
4																			
5																			

Note: D1: Dry waste deposited (Kg), D2: Dry waste sorted (Kg), D3: Dry waste rejected (Kg) to be documented for each day.

Name & Signature of Team Leader	Name and Signature of Plant Operator

7.5 RECORD KEEPING

RECORD BOOK FOR SELLING AT MRF

MONTH:	NAME OF SHG/ALF/CLF:
Name of MRF:	

No	Name of Buyer and contact number	Date	Address	Articles Sold	Unit price	Total Kg	Total price	Signature

Name & Signature of SHG/ALF/CLF President	Name & Signature of SHG/ALF/CLF Secretary	Seal of SHG/ALF/CLF	Name and Signature of Plant Operator	Name and Signature of Team Leader handling MRF

ROLES & RESPONSIBILITIES OF SHG/ALF/CLF

7.6 RECORD KEEPING

MONTHLY MEETINGS & TRAINING RECORD

MONTH/YEAR:	NAME OF SHG/ALF/CLF:
NAME OF MRF:	

LIST OF TRAININGS AND MEETINGS

Date	Training/ Meeting Name	Meeting Discussion	Resource person	No of Attendee

MINUTES OF THE MEETING

Subject		
Meeting Date		
Place		
Participants	From SHG/ALF/CLF Members	From ULB
Discussion Note:		

Name & Signature of SHG/ALF/CLF President	Name & Signature of SHG/ALF/CLF Secretary	Seal of SHG/ALF/CLF

ROLES & RESPONSIBILITIES OF SHG/ALF/CLF

8. REGULAR CLEANING OF WASTE SORTING AREA

Clean the MRF area daily



WHEN TO CONTACT THE ULB

WHEN TO CONTACT THE ULB

Contact ULB or concerned ULB official, for any of the following reasons

1



Infrastructure facility related repair & maintenance

2



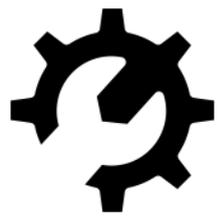
If you do not receive segregated waste from ULB

3



Irregular water & electricity supply

4



Equipment/machinery related repair & maintenance

5



Inert waste is not collected from the MRF

DO's & DONT's AT MATERIAL RECOVERY FACILITY

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DO'S	DONT'S
Do check the working and maintenance of the equipment on monthly basis	Avoid use of inflammable objects in the premises
Ensure indoor air quality and adequate lighting	No smoking
Provision of suitable exhausts/vents/scrubbers, etc.	Pregnant women to avoid operating equipment and strict prohibition of child labour
Workers shall be covered under social security and insurance schemes	Avoid wastage of water and electricity
Use Personal Protective Equipment	Avoid discrimination
Use first aid whenever required	No animals allowed and no littering in the premises
Ensure proper segregation of waste	Do not burn waste
Clean all the equipment after use	Do not use explosives or firearms and avoid long term storage of Refuse Derived Fuel (RDF)
Ensure adequate fire protection measures	Keep hands away from moving parts of equipment
Ensure good hygiene and sanitation practices including safe drinking water	Do not wear loose clothing around equipment

SAFETY PRACTICES TO BE ADOPTED AT MATERIAL RECOVERY FACILITY

SAFETY PRACTICES TO BE ADOPTED AT MRF

SR.	HAZARD	PRECAUTION	CURE
1	Cuts and injuries due to presence of broken glass, sharps, needles which may lead to septic wounds and tetanus	Use of Safety Gloves	Medical help should be immediately sought in case of injury
2	Vulnerable to blood borne diseases if hospital waste is collected	Gloves should be worn and avoid direct contact with any waste (especially hospital waste should be avoided)	Medical help should be immediately sought
3	Exposure to sun, radiation and rain	Areas with radiation should be avoided	In case of contact with any radioactive waste, they should immediately contact a doctor
4	Callosities on the fingers observed		Should immediately contact a doctor

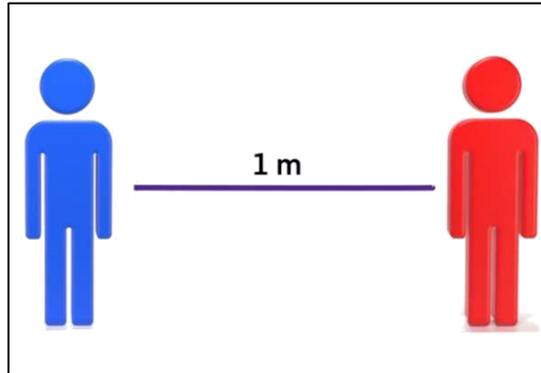
SPECIAL CARE DURING COVID – 19

SPECIAL CARE DURING COVID – 19

- **Wash hands and wear PPE – gloves, mask, helmet and boots before starting work**
- **Waste should be considered contaminated with virus.** Wear gloves and then only handle the waste
- Instruct the persons working to **maintain minimum 6 feet distance from each other while working**
- Wear **full sleeve and full length clothes**
- **Never** touch your face with your hand or glove
- **Wash hands** before and after use of toilets and before and after having food
- **Wash PPE** and **sanitize** them daily after use



Wear gloves while handling waste



Maintain social distancing



Wash your hands regularly with soap

SPECIAL CARE DURING COVID – 19

- **Clean the MCC** daily before and after work
- Request the ULB to **disinfect the MCC** daily
- Keep the **toilets and wash area** clean



Foot operated dispensers

- Provision of Foot operated liquid soap dispensers
- Provision of Foot operated sanitiser stand



Disinfecting mask and gloves

- Dispose the mask into dustbin (if using disposable mask)
- Dispose the gloves into dustbin (if using disposable gloves)
- Disinfect or wash the mask/gloves, if it is reusable as per Government guidelines



SPECIAL CARE DURING COVID – 19

Wash hands with soap for minimum 20 seconds

1



Wet hands

2



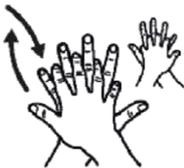
Apply soap

3



Rub hands palm to palm

4



Rub the back of hands

5



Scrub between fingers

6



Rub back of fingers of opposing sides

7



Clean thumb

8



Rub finger tips

9



Rinse hands

10



Dry with clean napkin



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