

# Training Manual for Self Help Groups/Area Level Federations/City Level Federations for **Operations and Maintenance of Micro Composting 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 Micro Composting Centre. 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 Micro Composting Centre (MCC)

What is the composting process

Role of the ULB in managing of a Micro Composting Centre

Role of SHG/ALF/CLF in managing a Micro Composting Centre

When to contact the ULB

Do's and Dont's at Micro Composting Centre

Safety practices to be adopted at Micro Composting Centre

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 Micro Composting Centre.

## TYPE OF TRAINING



Theory Duration



Practical Duration

## DURATION

**03:00**  
Hours

**02:00**  
Hours

## OBJECTIVE OF THIS TRAINING

1. How to operate and maintain a MCC
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 MCC
4. To sensitize the SHG members to take up O&M of MCC as means of livelihood

# **TYPES OF WASTE**

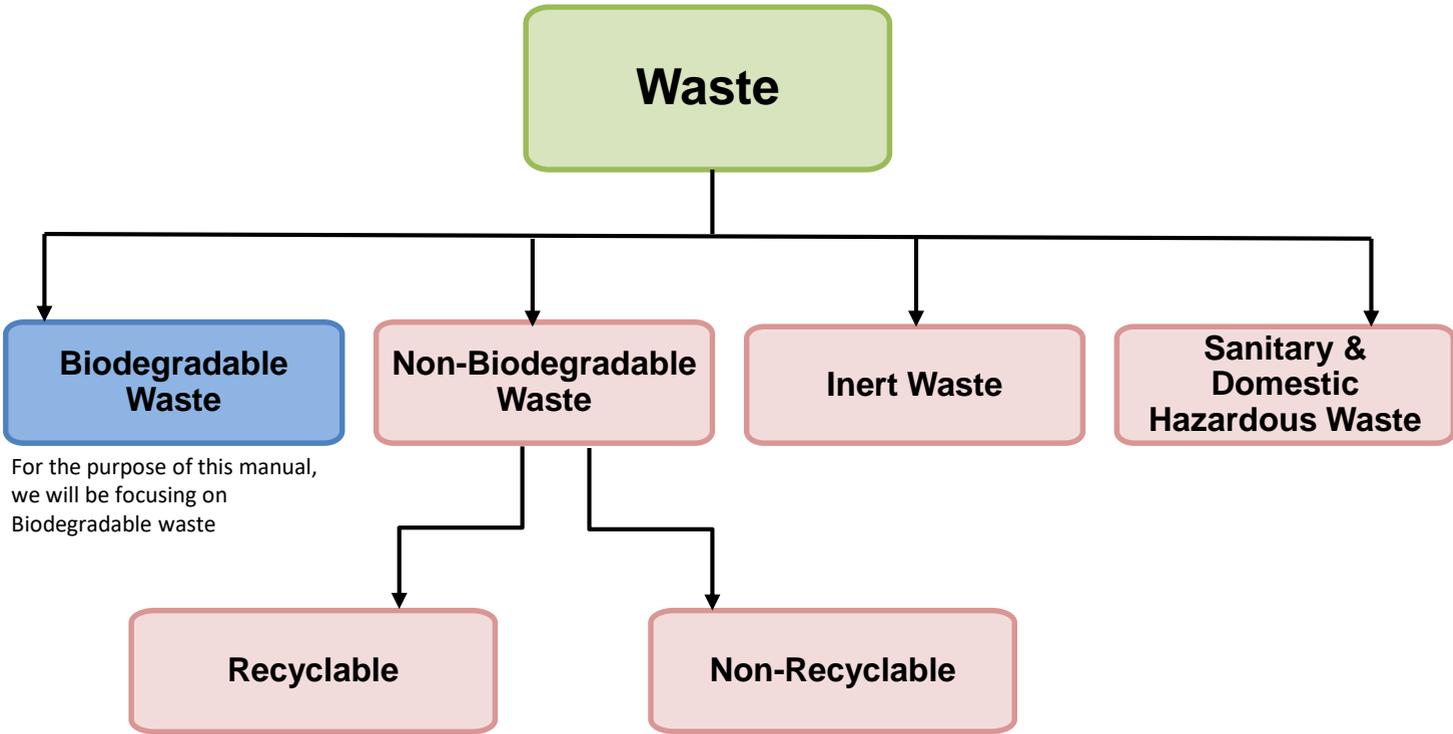
# WHAT IS WASTE

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 Biodegradable waste

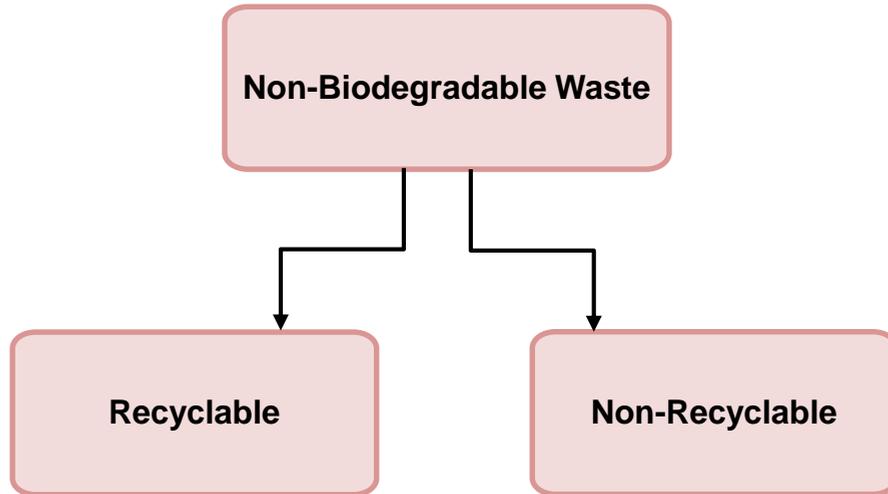
# WHAT IS BIODEGRADABLE WASTE

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



# WHAT IS NON-BIODEGRADABLE WASTE

## RECYCLABLE WASTE

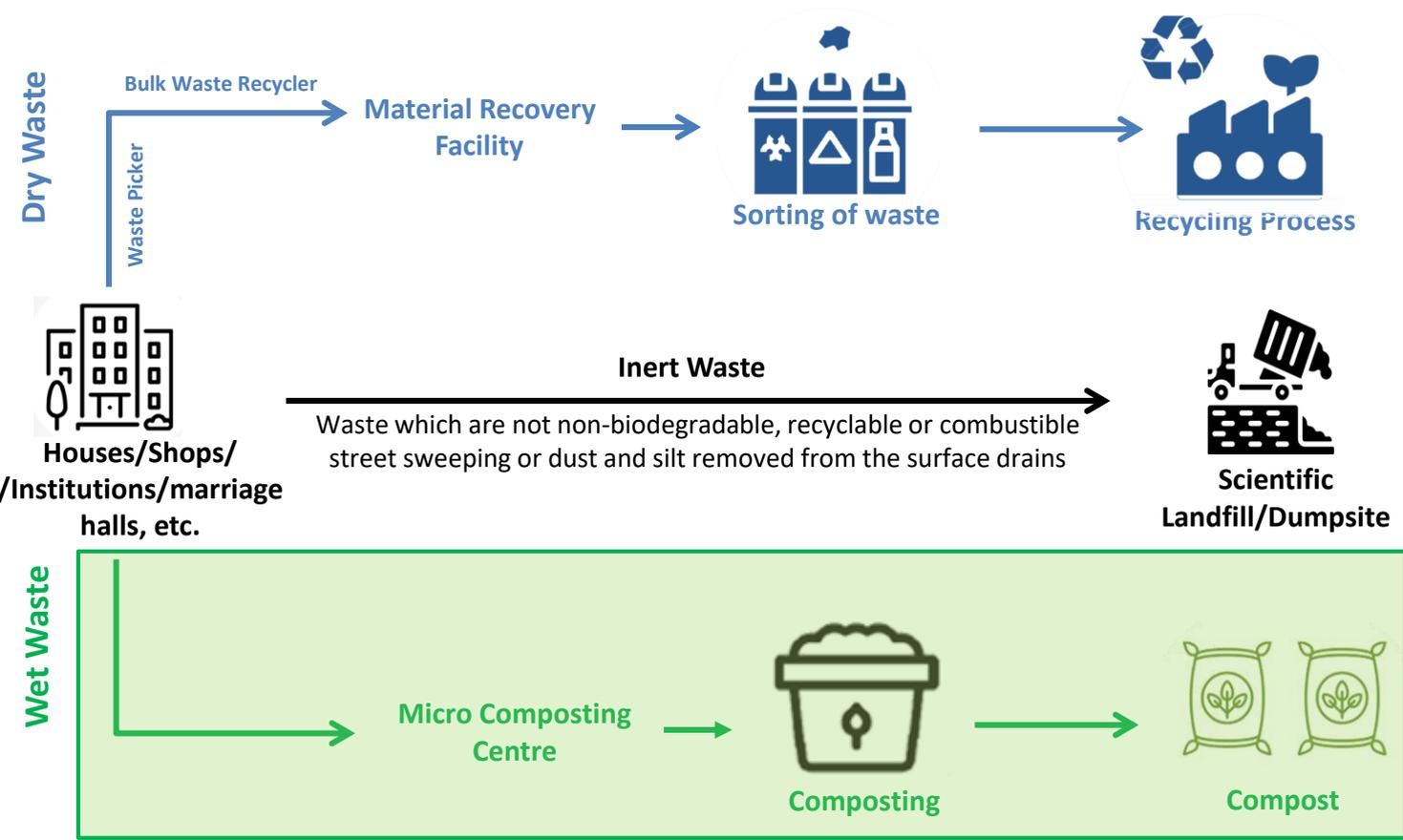


## NON - RECYCLABLE WASTE



# **WHAT IS A WASTE CYCLE**

# WHAT IS WASTE CYCLE



Icons Source: www. flaticon.com as on 22.07.2020  
Data Source: SWM Rules, 2016

# **WHAT IS A MICRO COMPOSTING CENTRE**

# WHAT IS A MICRO COMPOSTING CENTRE

A Micro Composting Centre is a facility where wet waste is processed to compost

Wet waste is received

It is processed into  
compost

The compost is packaged  
and sold



# **WHAT IS THE COMPOSTING PROCESS**

# STEPS FOR PREPARATION OF COMPOST

1



Shred the wet waste

2



Preparation of compost tub to receive shredded waste

3



Processing of wet waste

4



Preparation of compost

5



Packaging & Marketing of compost

# 1. SHRED THE WET WASTE

**STEP 1** – Unload the wet waste in the waste receiving area



**STEP 2-** Transfer the wet waste on the conveyer belt of the waste shredding machine

- Waste is passed through the shredding machine to shred it into smaller pieces
- Collect the shredded waste in a container
- Remove dry/inert waste if any



## 2. PREPARATION OF COMPOST TUB TO RECEIVE SHREDDED WASTE

- Compost tubs are typically 3.0m x 2.0m x 1.0m in size
- Apply half inch cow dung slurry on inner walls of the tub. Approximately 20 liters of cow dung slurry is required for one tub
- Cow dung slurry helps to accelerate the composting process
- Repeat the same process of applying cow dung slurry for all the tubs



## 2.1 PREPARATION OF EM SOLUTION

How to prepare EM solution?

Materials required :



90 liters water



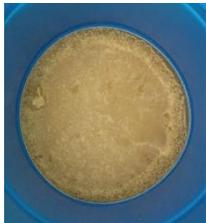
5 kg jaggery



3 kg curd



- Mix water, jaggery and curd in a container. Close the container
- Let this solution ferment for 7 days. Beware, this solution has a strong smell
- After 7 days, add rice bran to the solution and make balls from this EM solution. As an alternative to rice bran, you can add husk and dried leaves
- These EM balls are then crushed to convert into powder form
- This is added to the compost tubs after 4 -5 days of adding shredded waste



Mixing of water,  
jaggery & curd



EM Solution containers



EM Solution balls



Adding EM Solution balls

## 2.2 ADD LEACHATE TO THE WASTE IN COMPOST TUB

- Each compost tub has a leachate pit
- Each compost tub is connected to a common leachate collection tank
- Leachate is added to the waste in the compost tub for retention of moisture during the composting process
- Clean the floors around the compost tub after adding leachate, as flies and mosquitos can get accumulated

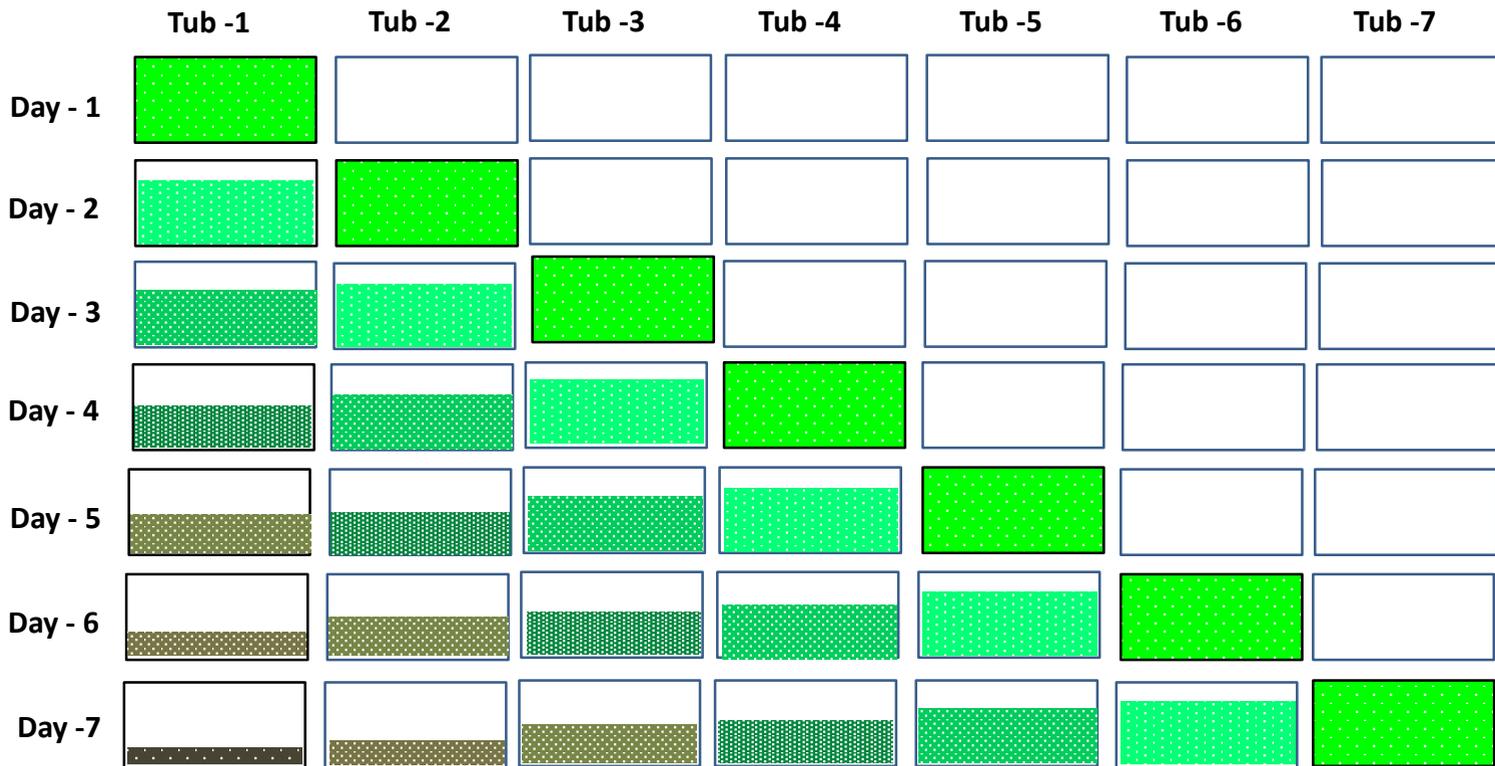


### 3. COMPOSTING PROCESS

ROUND 1

DAY 1 TO 7  
TUB NO. 1 TO 7

PUT SHREDDED WASTE IN THE COMPOST TUB



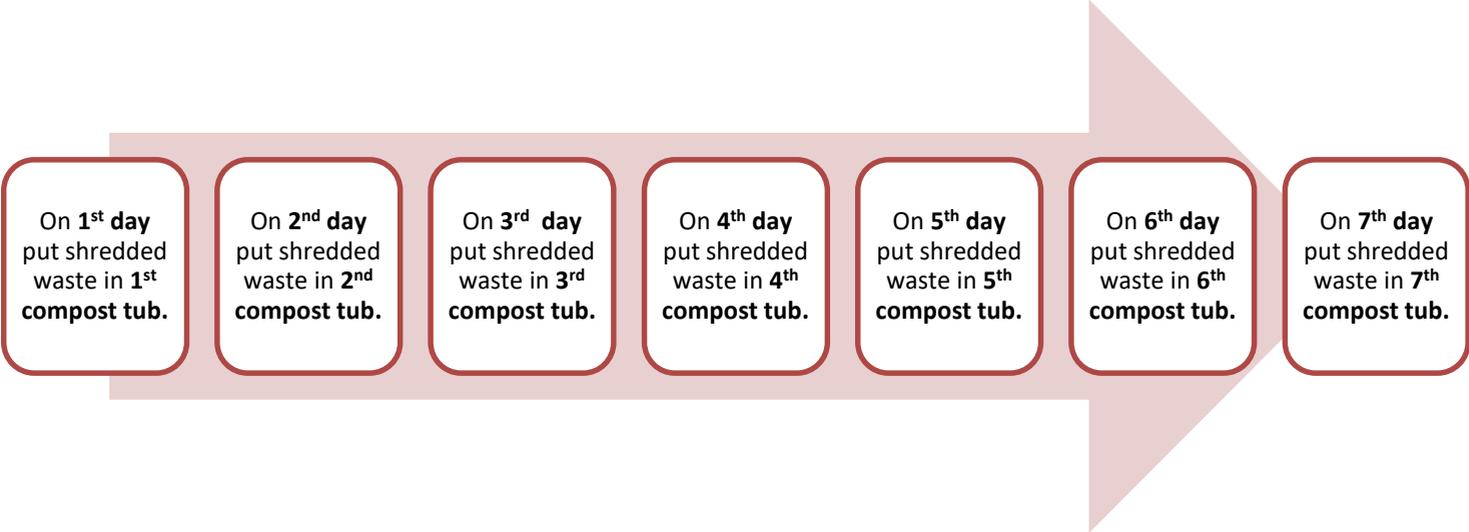
### 3.1 COMPOSTING PROCESS

#### ROUND 1

**DAY 1 TO 7  
TUB NO. 1 TO 7**

**PUT SHREDDED WASTE IN THE COMPOST TUB**

- On the 1<sup>st</sup> day put the shredded waste in 1<sup>st</sup> compost tub
- On 2<sup>nd</sup> day put the shredded waste in 2<sup>nd</sup> compost tub
- Continue this method till 7<sup>th</sup> day, on which the shredded waste will be put in 7<sup>th</sup> compost tub
- Add EM Solution balls in the compost tubs after 2-3 days of adding shredded waste



Repeat the above process for Round 2 and 3 as mentioned below

#### ROUND 2

**DAY 8 TO 14  
TUB NO. 1 TO 7**



#### ROUND 3

**DAY 15 TO 21  
TUB NO. 1 TO 7**

## 3.2 COMPOSTING PROCESS

Sequence in which shredded waste has to be put in Tub **1-14 Compost** for **Day 1 - 42**

### TUB – 1

Waste to be added on  
DAY - 1  
DAY - 8  
DAY -15

### TUB – 2

Waste to be added on  
DAY - 2  
DAY - 9  
DAY -16

### TUB – 3

Waste to be added on  
DAY - 3  
DAY - 10  
DAY -17

### TUB – 4

Waste to be added on  
DAY - 4  
DAY - 11  
DAY -18

### TUB – 5

Waste to be added on  
DAY - 5  
DAY - 12  
DAY -19

### TUB – 6

Waste to be added on  
DAY - 6  
DAY - 13  
DAY -20

### TUB – 7

Waste to be added on  
DAY - 7  
DAY - 14  
DAY -21

Repeat the above sequence in which shredded waste is put in

**Tub 8-14 from Day 22 - 42**

## 4. PREPARATION OF COMPOST

- The compost will be ready in 42 days
- Remove compost from the tub and sieve for uniform size
- Put the rejects from the sieve back in the compost tub
- Leave the sieved compost for seven days for sun drying



# 5. PACKAGING & MARKETING OF COMPOST

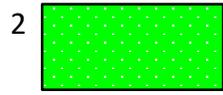
Weigh & pack the compost in standard size bags provided by ULB



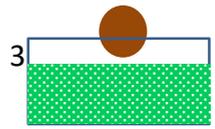
# OVERALL CYCLE OF PREPARATION OF COMPOST



1 Add half inch layer of cow dung



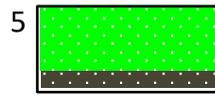
2 Add shredded waste on Day 1



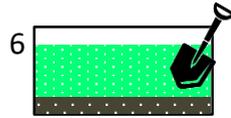
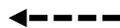
3 Add EM solution balls after 3-4 days of adding of shredded waste



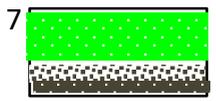
4 Turn the waste upside down for better aeration with a shovel



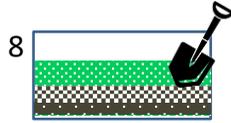
5 Add shredded waste on Day 8 over the 7 day old waste



6 Turn the waste upside down for better aeration with a shovel



7 Add shredded waste on Day 15 over the 14 day old waste



8 Turn the waste upside down for better aeration with a shovel every 3-4 days. Do not add any further waste till Day 45



9 Waste turns black in colour at end of 45 days

# **ROLE OF ULB IN MANAGING A MICRO COMPOSTING CENTRE**

## RESPONSIBILITIES OF THE URBAN LOCAL BODY (ULB)

1. Collection and transportation of waste to MCC

2. Provision of infrastructural facilities

3 Requirements at MCC

4. Personal health and Provision of PPE

5. Packaging and Marketing of compost

# 1. COLLECTION AND TRANSPORTATION OF WASTE TO MCC

- Collection & transportation of segregated waste to MCC
- Ensure wet waste is segregated



## 2. PROVISION OF INFRASTRUCTURAL FACILITIES

### Infrastructure Requirement:

- Provision of well lit MCC shade with all required facilities as per SOP
- Provision of **toilets, changing room, office, supply of water & electricity**
- Ensure that all facilities are in working conditions during handover
- Regular monitoring and maintenance of the infrastructure facilities



### 3. REQUIREMENTS AT MCC



Waste receiving area



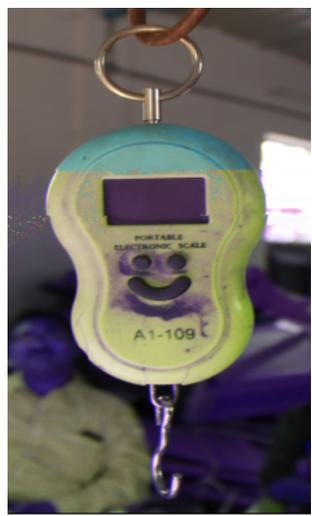
Compost Tubs



Waste shredder machine with conveyor belt



Container for EM solution



Weighing Scale

### 3. REQUIREMENTS AT MCC

RESPONSIBILITIES OF THE URBAN LOCAL BODY



Compost storage area



Packaging for compost



Handcart for waste transfer



Personal Protective Equipment



Shovel

# 4. PERSONAL HEALTH AND PROVISION OF PPE

- Conduct regular health check up of the persons working at the MCC
- 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 MCC

## ULB to provide below mentioned trainings



Fire fighting



Record keeping



Personal hygiene



Usage & maintenance of PPE



Regular Health check-up



# 5. PACKAGING & MARKETING OF COMPOST

## ULB to do the packaging and marketing of compost

- ULB shall provide the required packaging for compost at their own cost
- Develop linkages with probable compost buyers – Government agency, individuals, private company, farmers, etc.
- Update rates as per market prices



RESPONSIBILITIES OF URBAN LOCAL BODY

**ROLE OF SHG/ALF/CLF  
IN MANAGING A  
MICRO COMPOSTING CENTRE**

## RESPONSIBILITIES OF SHG/ALF/CLF

1. Composting process

2. Maintain safety and personal hygiene

3 Record keeping

4. Regular cleaning of MCC

# 1. COMPOSTING PROCESS

RESPONSIBILITIES OF SHG/ALF/CLF

- Execute the process of composting as per the SOP
- Refer to Steps for Preparation of Compost mentioned in section of this training manual – **WHAT IS COMPOSTING PROCESS?**

**1**



Shred the wet waste

**2**



Preparation of compost tub to receive shredded waste

**3**



Processing of wet waste

**4**



Preparation of compost

**5**



Packaging & Marketing of compost

## 2. MAINTAIN SAFETY AND PERSONAL HYGIENE

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



**BOOTS**



**MASK**



**HELMET**



**GLOVES**



**REFLECTIVE VEST**



**HANDWASHING**



Always wear PPE while working

### 3. 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.	Record of monthly retail of compost	Weekly/ fortnightly	SHG/ALF/CLF Leader and Plant Operator
4.	Monthly Meetings & Training Record	Monthly	SHG/ALF/CLF Leader and Plant Operator

# 3.1 RECORD KEEPING

## DAILY ATTENDANCE REGISTER

<b>MONTH:</b>	<b>NAME OF SHG/ALF/CLF:</b>
<b>Name of MCC:</b>	
<b>SHIFT 1 TIME:</b>	<b>SHIFT 2 TIME:</b>

No	Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Remarks																			
<b>SHIFT 1</b>																																																				
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Each member shall mention the number of hours worked per day at the MCC. 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.

<b>Name &amp; Signature of SHG/ALF/CLF President</b>	<b>Name &amp; Signature of SHG/ALF/CLF Secretary</b>	<b>Seal of SHG/ALF/CLF</b>	<b>Name and Signature of Plant Operator</b>	<b>Name and Signature of Team Leader handling MCC</b>

# 3.2 RECORD KEEPING

## PPE INSPECTION RECORD

<b>MONTH:</b>	<b>NAME OF SHG/ALF/CLF:</b>
<b>NAME OF MCC:</b>	<b>DATE OF INSPECTION:</b>
<b>PERIOD OF INSPECTION:</b>	<b>NAME OF INSPECTING SUPERVISOR:</b>

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

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

<b>GOOD:</b> 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.	<b>DAMAGED:</b> 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.
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<b>Name &amp; Signature of Inspecting Supervisor</b>	<b>Name &amp; Signature of SHG/ALF/CLF Member</b>	<b>Seal of SHG/ALF/CLF</b>	<b>Name and Signature of Plant Operator</b>

ROLES & RESPONSIBILITIES OF SHG/ALF/CLF

### 3.3 RECORD KEEPING

#### RECORD OF MONTHLY RETAIL FROM MCC

MONTH/YEAR:	NAME OF SHG/ALF/CLF:
Name of MCC:	

No	Date	Weight (kg)	Unit Price (kg)	No of bags			Total Price	Remarks
				3kg	5kg	20kg		

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 MCC

**ROLES & RESPONSIBILITIES OF SHG/ALF/CLF**

# 3.4 RECORD KEEPING

ROLES & RESPONSIBILITIES OF SHG/ALF/CLF

## MONTHLY MEETINGS & TRAINING RECORD

<b>MONTH/YEAR:</b>	<b>NAME OF SHG/ALF/CLF:</b>
<b>NAME OF MCC:</b>	

### LIST OF TRAININGS AND MEETINGS

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

### MINUTES OF THE MEETING

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

<b>Name &amp; Signature of SHG/ALF/CLF President</b>	<b>Name &amp; Signature of SHG/ALF/CLF Secretary</b>	<b>Seal of SHG/ALF/CLF</b>

# 4. REGULAR CLEANING OF MICRO COMPOSTING CENTRE

Clean the MCC 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



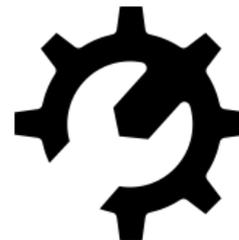
If you do not receive segregated  
waste from the municipality

3



Irregular water & electricity  
supply

4



Equipment/machinery related  
repair & maintenance

**DO's & DONT's AT  
MICRO COMPOSTING CENTRE**

## DO's & DONT's AT MICRO COMPOSTING CENTRE

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 completion of the entire composting cycle	Do not use explosives or firearms
Clean all the equipment after use	Keep hands away from moving parts of equipment
Ensure adequate fire protection measures	Do not wear loose clothing around equipment
Ensure good hygiene and sanitation practices including safe drinking water	

# **SAFETY PRACTICES TO BE ADOPTED AT MICRO COMPOSTING CENTRE**

## SAFETY PRACTICES TO BE ADOPTED AT MCC

SR.	HAZARD	PRECAUTION	CURE
1	Cuts and injuries 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 faecal matter and 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

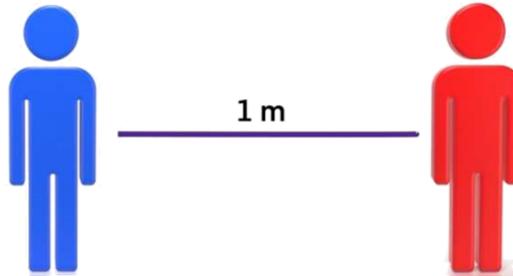
# **SPECIAL CARE DURING COVID – 19**

## 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.**



# SPECIAL CARE DURING COVID – 19

## Foot operated dispensers

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



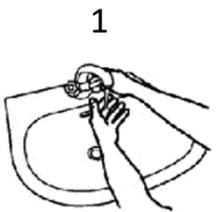
## Disinfecting mask and gloves

- 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

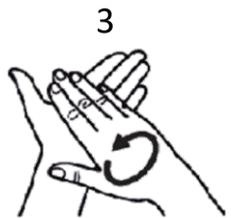
Wash hands with soap for minimum 20 seconds



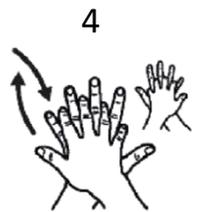
Wet hands



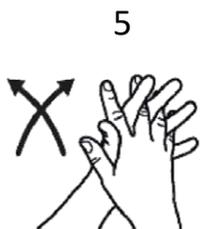
Apply soap



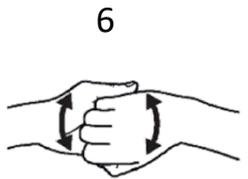
Rub hands palm to palm



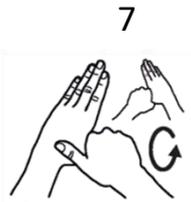
Rub the back of hands



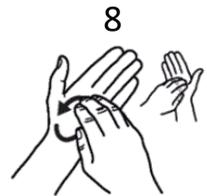
Scrub between fingers



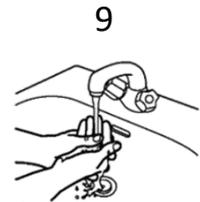
Rub back of fingers of opposing sides



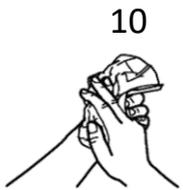
Clean thumb



Rub finger tips



Rinse hands



Dry with clean napkin



# MCC



## MICRO COMPOST CENTER PARADEEP MUNICIPALITY



Ministry of Housing  
and Urban Affairs  
Government of India

### DAY-NULM

Deendayal Antyodaya Yojana  
National Urban Livelihoods Mission



**UMC**  
URBAN MANAGEMENT CENTRE