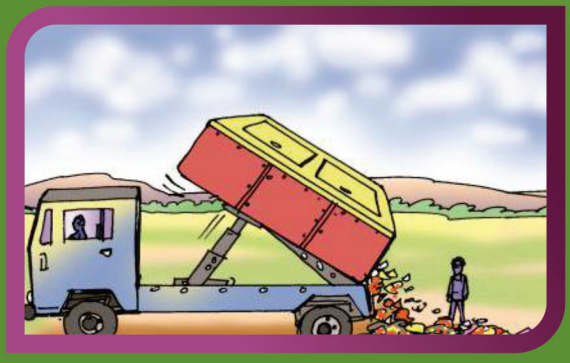
ENHANCING CIVIC ENGAGEMENT

WASTE MANAGEMENT

STUDENT BOOK

Std - V



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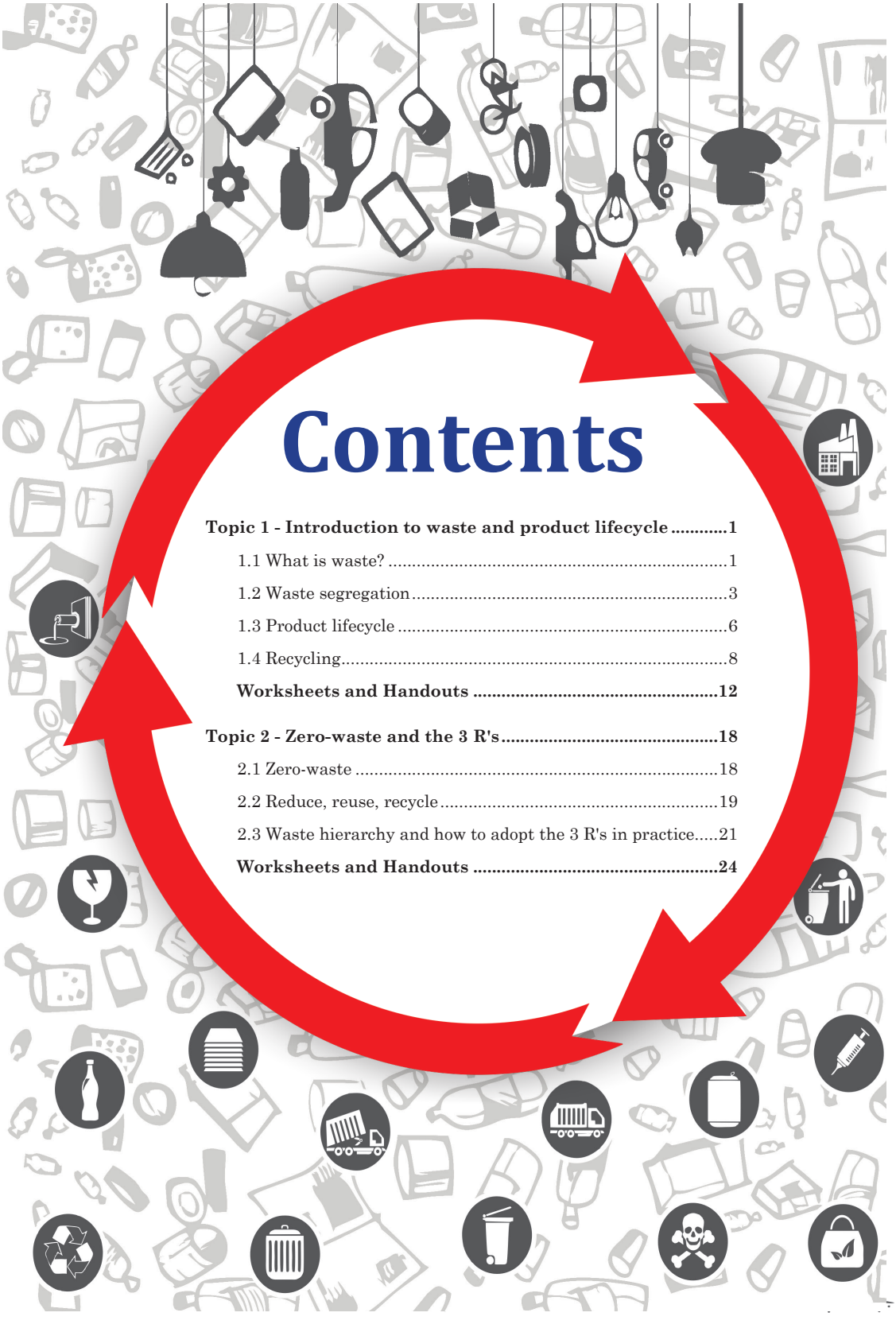
Government of Goa



Contents

Note for Teacher

Subject Linkages Sheet for Waste Management Std-V		
No.	**ECE Activities**	**Subject Linkages** **Chapter Number, Name & Page No**
	Topic 1. Introduction to waste and product lifecycle -	**EVS - Part 02**
1	Lesson/Activity plan: Concept teaching - Introduction to waste and product lifecycle	5th-EVS, Part-2, CH -16 - Who will do this Work? Page No - 147
2	Activity 1: Art & Craft Activity.	
3	Activity 2: Waste Audit for Self.	
4	Activity 3 - Waste trail of school.	
5	Activity 4 - Chart/collage on recycling.	
	Topic 2: Zero Waste and 3'R's	**EVS - Part 01 & 02**
1	Lesson/Activity plan: Concept teaching - 3 R's - Reduce, recycle, reuse	EVS, Part 2, CH -12 - What if it Finishes...? Page - 110
2	Activity 1 - Paper bag making activity.	
3	Activity 2 - Chart making on zero-waste and 3 'R's.	
4	Activity 3 - Speeches on waste management and recycling.	
5	Activity 4 - Best out of waste competition.	
6	Activity 5 - Success story of zero-waste town in India.	
	School - level activities/events	
1	Litter-free zone in school	EVS, Part 01,CH - 8 - A Treat for Mosquitoes, Survey report, Page - 74
2	Display of good practices of waste management	
3	"Carry a bag, not carry bag!" campaign	
4	Observe the recyclable vs. non-recyclable waste	
	Community-level projects	
1	Signature campaign	(To be planned in the school yearly plan as part of exposure visits/eco clubs/science commitees/value education/art & craft period/work experience period/scouts & guides , science exhibiition/science experiments or on Special day like 15th August or 26th January)
2	Guest speaker	

Topic 1 - Introduction to waste and product lifecycle

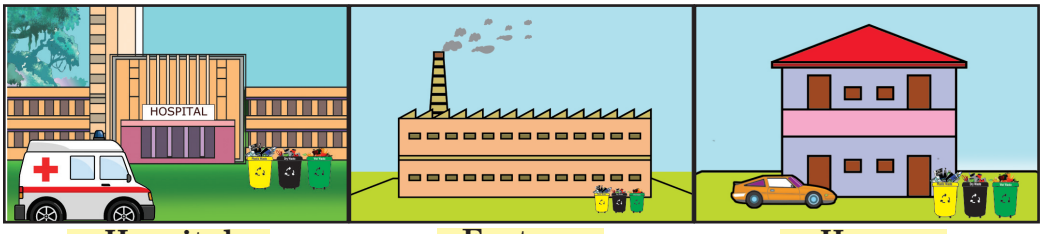
1.1 What is waste?

Waste is defined as discarded materials which have no value in normal or ordinary use. Waste includes items we don't need and have therefore discarded. Waste comes in infinite sizes; it can be as small as a pin or as large as the body of a school bus. Essentially, waste refers to unwanted materials and objects that people have thrown away. It is often called trash, rubbish or junk. It can be solid, liquid or gaseous.

Everyone generates waste, but only some people are aware of the hazards of waste accumulation on the environment.

Sources of waste: Waste is generated at the following places:

Hospitals, Factories, Homes, Farms, Schools and colleges, Mines, Construction sites, Picnic spots

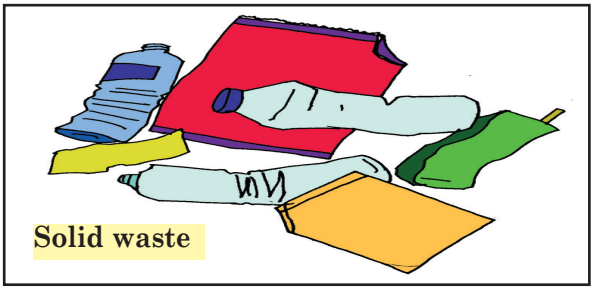


Hospital | Factory | Home

Mine | School | Construction site

1.2 Types of waste:

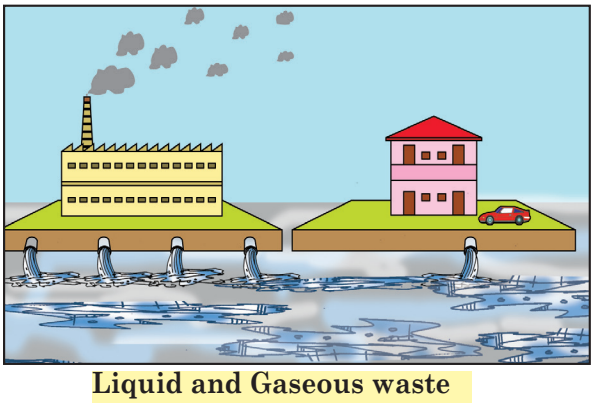
a) **Solid waste:** Solid waste includes old car tyres, broken furniture, food waste, or any garbage.



Solid waste

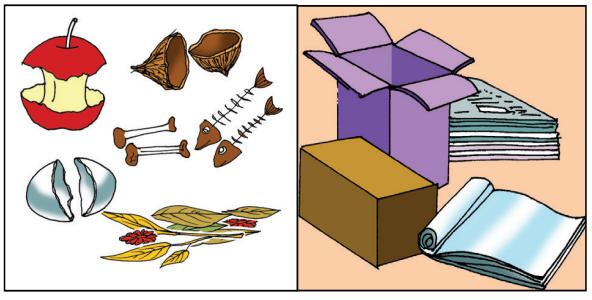
b) **Liquid waste:** It includes waste water from homes, liquids used for cleaning in industries, etc.

C) **Gaseous waste:** It includes smoke from vehicles, factories, homes, etc.



Liquid and Gaseous waste

2 Organic/Inorganic:

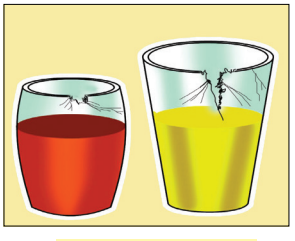


Organic waste

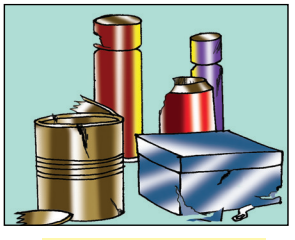
a) **Organic waste:** It comes from plants and animals.It commonly includes food waste, fruit and vegetable peels, waste from poultry, etc. This waste is bio-degradable, which means it can be easily decomposed. Many people make compost of their organic waste and use it in their gardens.

b) **Inorganic waste:** It is the type of waste that does not contain organic compounds. It consists of glass, metal, various kinds of stones, plastic, etc, which microorganisms cannot decompose.

Plastic



Glass



Metal

3 Recyclable/non-recyclable:

a) **Recyclable:** Recycling is processing of used materials (waste) into new useful products. Waste that can be potentially recycled is called recyclable waste.

Aluminum products: Soda, milk and tomato ketchup cans.

Plastic: Grocery, shopping bags and bottles

Glass products: Glass bottles and broken glass

Paper products : Newspapers, magazines, etc. fall into this category.

b) **Non-recyclable:** These items cannot be recycled, like wind screen glass, diapers, mirrors, chewing gums, disposable plates, footwear, cold drink cans, car loom, etc.

Non-recyclable waste

4 Hazardous waste:

This refers to the waste that can threaten public health or the environment. Examples include fire extinguishers, pesticides, mercury-containing equipment and batteries.

Hazardous waste

1.3 Waste segregation:

Waste segregation is the separating and sorting of waste to facilitate recycling.

1.4 Importance of segregation:

Proper segregation leads to proper recycling. Most of our waste can be recycled.

a. It keeps the environmental clean and fresh
b. It saves the earth and conserves energy
c. It reduces environmental pollution
d. It makes the garbage collector's job easier and safer
e. It prevents contamination of water bodies

1.5. Product lifecycles:

Product lifecycle refers to the different stages through which a product goes till it gets worn out. Each stage of the lifecycle generates specific types of waste. The stages are as follows:

a. Extraction and transformation of raw materials
b. Manufacturing and production of goods
c. Distribution and consumption of manufactured products
d. Disposal and recycling

Lifecycle of a product

Worksheets and Handouts

1.1 What is waste, types of waste
1.2 Waste segregation, importance of waste segregation, waste treatment
1.3 Product lifecycle
1.4 Recycling - Concept, meaning and importance

Handout 1 - How to segregate home waste

Record sheet: Activity 2 - Waste audit for self

Record your waste categories with weight here -
Date - .....

Types of waste	Material included
Dry waste	
.....	.....
.....	.....
.....	.....
Wet waste	
.....	.....
.....	.....
.....	.....
.....	.....

Write your learnings about the exercise -

.....

.....

.....

.....

Write five ways to reduce this waste -

1. .....
2. .....
3. .....
4. .....
5. .....

Record sheet: Activity 3 - Waste trail of the school

Write your observations of the waste trail (or trash trail) into the following categories -

Place visited	.....
Waste segregation methods	.....
No. of dustbins placed and labelled	.....
Amount and type of trash	.....
Common dumpsite of school - how is it managed?	.....

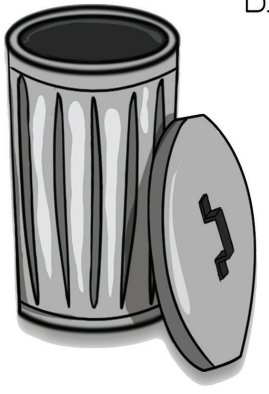
Write here about the trash trail of the school based on your learning after the visit and discussions with the sanitary supervisor of your school -

.....

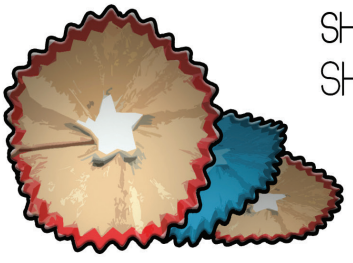
Worksheet 2 - What am I made up of?

Which items can go into your school dustbin? Mark the direction with an arrow. Which items are non-recyclable and will need to be separated? Cross them out.

CLASSROOM BIN

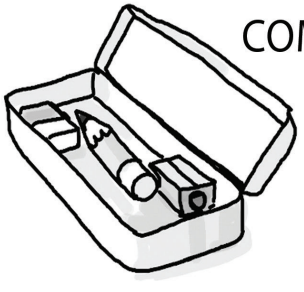


SHARPENER SHAVINGS

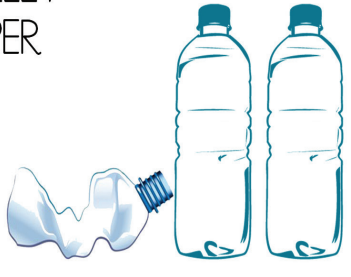


NEWSPAPER

COMPASS BOX



PLASTIC BOTTLES



TOILET PAPER

RULER

Worksheet 3 - Compare waste segregation methods followed in school and at home

What do you understand about waste segregation? Why is it important to segregate waste at source (where it is produced)?

Difference between waste segregation methods

Type of waste generated (same or different)	
If different, what are the differences?	
No. of dustbins placed	At home - In the class -
Garbage bags used (Yes/No)	At home - In the class -
Separate dustbins used (Yes/No)	At home - In the class -
Waste disposal (Every day/ Twice a week/Weekly/ Monthly)	At home - In the class -

Topic 2 - Zero-waste and the 3 'R's

2.1. Zero waste –meaning and importance

2.2. Reduce, reuse, recycle – concept of the 3 'R's and its importance

2.3. Waste hierarchy and how to adopt the 3 'R's in practice

2.1 Zero waste – meaning and importance

From plastic packaging to outdated television sets and bins of rubble outside construction sites, the amount of waste generated shows how we live our lives. However, do you know that waste contains valuable recoverable and recyclable materials that can be used as a resource? As resources become scarce, conserving and recovering what we already have, becomes necessary.

Zero waste means designing and managing products and processes to eliminate the volume and poisonous nature of waste. Zero waste minimises waste and reduces consumption.

Importance of Zero waste

a. It protects the environment by reducing the amount of waste sent to the landfill, incinerator and helps cut greenhouse gas (GHG) emissions.

b. It eliminates all discharges to land, water and air that cause threat to our planet.

c. Zero waste will save natural resources and energy.

2.2 Reduce, reuse, recycle – concept of the 3 'R's and its importance

The 3 'R's refer to reduce, reuse and recycle.

A. Reduce: Reducing is cutting down the amount of trash we make.

B. Reuse: Reusing is finding a new way to use the trash.

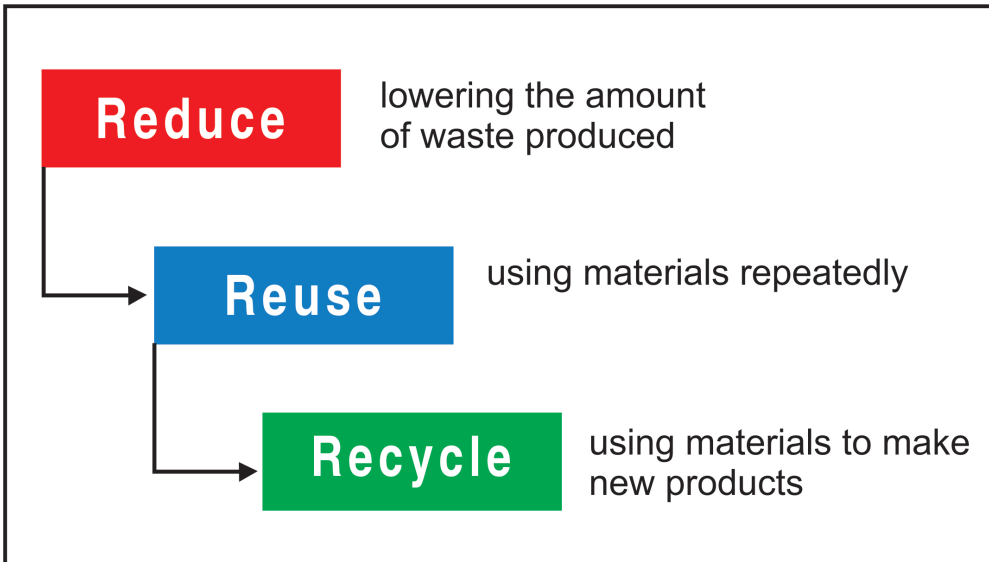
C. Recycle: Recycling is processing the trash to make new goods that can be sold again.

Importance of the concept of the 3 'R's :

i. Preserves natural resources
ii. Saves energy
iii. Reduces greenhouse gas emissions
iv. Reduces pollutions
v. Reduces landfill space
vi. Creates jobs
vii. Stimulates technological advances
viii. Saves money

2.3 Waste hierarchy and how to adopt the 3 'R's in practice

The waste hierarchy consists of the 3 'R's and goes as follows:



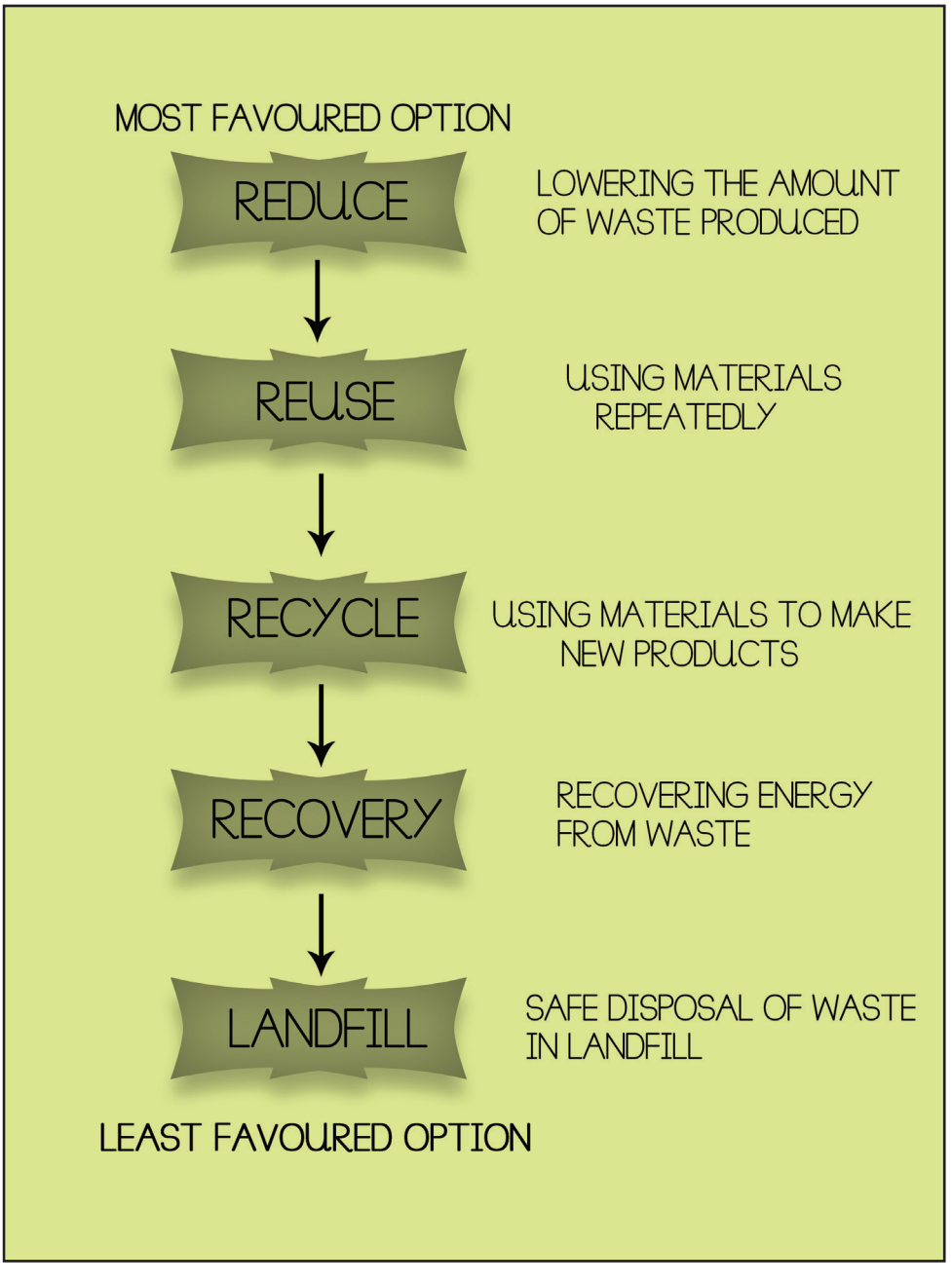
The waste hierarchy is the order in which actions need to be taken to reduce the amount of waste generated and to improve the overall waste management processes and programmes.

Worksheets and Handouts

2.1 Zero-waste - Definition and importance
2.2 Reduce, reuse, recycle - Concept of the 3 'R's, definition and importance
2.3 Waste hierarchy and how to adopt the 3 'R's in practice

Handout 1 - the 3 'R's

Handout 2 - Waste hierarchy



Worksheet 1 - Identify the recyclable waste

Go through the ten items shown below. Identify and write the recyclable waste and other waste (garbage) in different columns.

RECYCLE	GARBAGE

Worksheet 2 - the 3 'R's

Answer the following questions:

1. How does recycling help the environment?

.....

.....

2. Name a few things that can be recycled.

.....

.....

3. Do you think we should recycle newspaper? Why or why not?

.....

.....

4. What would the environment be like without recycling?

.....

.....

5. What are the things that you can reuse instead of throwing them away?

.....

.....

6. What items can you refuse to use or reduce your consumption of to lessen the amount of waste?

.....

.....