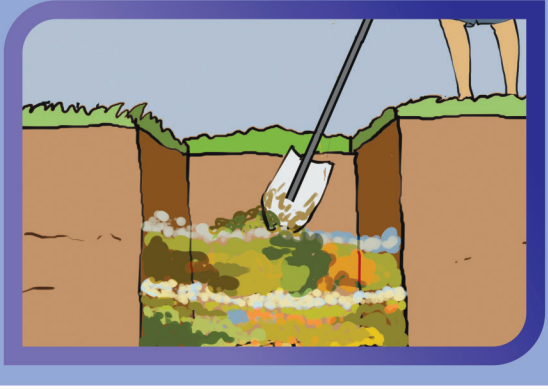
ENHANCING CIVIC ENGAGEMENT

PERSONAL HYGIENE AND WASTE MANAGEMENT

STUDENT BOOK

Std - VIII



State Council of Educational Research and Training
Government of Goa

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Topic 1 - Personal hygiene practices

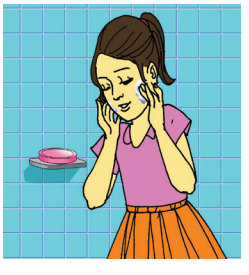
1.1 Understanding personal hygiene practices

1. Different personal hygiene practices

A. Shower daily:

- This is the best way to get rid of any dirt, sweat or germs that your body may have accumulated throughout the day, and prevent hygiene-related diseases. As body showering daily helps you feel fresh, look, and smell your best throughout the day.
- Use a towel to gently scrub your entire body, removing dead skin cells and dirt. Remember to replace towels regularly as bacteria can easily grow on them. Wash your hair regularly (depending on your hair type) with a good shampoo.

B. Wash your face daily: Remember that your facial skin is more sensitive than the skin on other parts of your body. Wash your face properly (and regularly) with a soap or face cleaner as per your skin type - dry, oily, mixed or normal.



C. Brush your teeth every morning and evening: Brushing teeth regularly helps prevent gum disease, which has been linked to other illnesses elsewhere in the body like heart disease, stroke, and diabetes. It is especially important to brush teeth after eating sweets or acidic foods that cause tooth erosion.

- To keep your gums extra strong, use a soft bristle toothbrush and brush your teeth in between meals.
- Floss your teeth every night/gently massage your gums with your fingers to prevent gingivitis, a gum disease.

Brushing teeth helps prevent bad breath.

D. Wash your clothes after wearing them: In general, shirts should be washed after every use, while skirts, pants and shorts can be worn a few times before they require washing. Use your best judgement to determine how often to wash your clothes. Under-garments should be washed daily. Remove any stains, wrinkles, hair or lint from your clothes before wearing them.

E. Trim your hair every 4-8 weeks: Whether you're trying to grow your hair out or prefer to keep it short, trimming will keep it healthy, getting rid of split ends. It will give you an overall cleaner, healthier appearance.

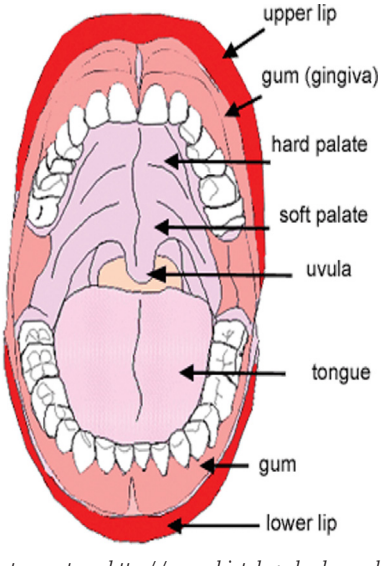
F. Clip your fingernails and toenails regularly with a nail cutter: Not only will this keep your hands and feet looking their best, but it will also prevent hangnails, breakage, and other potential damage to your nails. Short nails won't trap dirt under them the way long nails do.

G. Wash your hands with soap and water: This is one of the most important ways to avoid getting sick and spreading germs to others. Wash your hands after using the toilet; before, during, and after preparing food; before eating food; before and after caring for someone who is sick; after blowing your nose, coughing, or sneezing; and after handling animals or animal waste. Consider keeping a hand sanitiser with you at all times in case you can't reach a bathroom to wash your hands.

H. Cover your nose and mouth when you cough or sneeze: This is extremely important if you want to avoid spreading germs to those around you. Be sure to wash your hands with soap and water after you cough or sneeze.

I. Don't share razors, towels, or makeup with other people: Sharing personal items like these with other people increases the likelihood of spreading skin infections. If you do share towels or clothing, be sure to wash them both before and after lending them to others.

J. Visit your doctor regularly: Seeing your doctor regularly can help identify illnesses and infections early, making it much easier to treat them. Visit your local doctor/ physician especially when you are feeling sick or think you may have an infection.



(Photo courtesy: http://www.histology.leeds.ac.uk/oral/assets/mouth.gif)

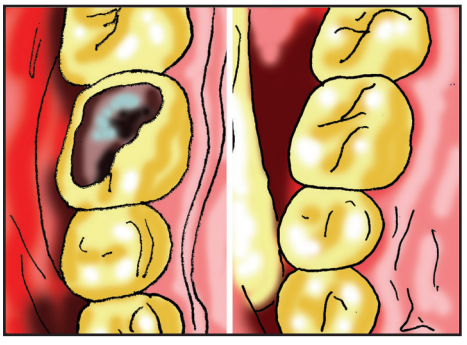
2. Important living tissues of the mouth:

The teeth, tongue, the lining of the mouth, gums, and bone are all living tissues. All of them perform very important functions. They help us to chew, speak and keep our mouth and throat moist. Their proper care is extremely vital because negligence can lead to several illnesses and disorders in the other parts of the body. Do read more about these tissues as it will help you realise the importance of maintaining good oral care.

1.2 Oral care

Implications of wrong oral care practices -

1. Dental decay (caries)



Dental caries begin when certain bacteria, mainly S. mutans, digest sugars and starches and produce acids that dissolve the enamel of the teeth. The colourless and sticky film of bacteria on our teeth and gums is called 'dental plaque'. When this plaque hardens and builds up in minerals, it is called 'tartar' which sticks to the enamel and underneath the gum line. It is visible as a brown or yellow deposit over the teeth and gum line. Sugars and other carbohydrates provide nutrients for oral bacteria to survive and reproduce. The decay process will occur more quickly if plaque is not removed every day and fluoride is not used daily.

2. Tobacco and oral cancer

Frequent use of tobacco and alcohol can lead to oral cancer. Cancer of the mouth is seen to a large extent in smokers and smokeless tobacco users. Approximately 90% of people with mouth cancer are tobacco users.

Indians consume tobacco in both forms, smoked as well as smokeless. A research conducted in 2003 by the Tata Institute of Fundamental Research (TIFR) shows that Indians consume around 100 crore cigarettes a day, and out of the 7 to 9 lakh cases of cancer per year, 2.5 lakh are related to tobacco alone.

http://www.qmedicine.co.in/top%20health%20topics/M/Mouth%20(Oral)%20Cancer.html

Reasons for oral cancer

		
https://en.wikipedia.org/wiki/Tobacco_smoking	*https://www.drpawluk.com/blog/pemfs-smoking-cessation/*	*https://www.medicalnewstoday.com/articles/157163.php*
A. Consumption of tobacco	B. Cigarette smoking	C. Consumption of alcohol

Golden rules for oral hygiene maintenance

1. Brush your teeth twice daily (morning and before bedtime) with a toothbrush and fluoride toothpaste.
2. Floss should be used to clean the area between the teeth.
3. Make sure to brush for at least two minutes each time.
4. Smear the brush with toothpaste the size of a pea.
5. Clean your tongue as well while you brush.
6. Replace your toothbrush every three months or after a bout of common cold or flu.
7. It is unhygienic to share your toothbrush with others.
8. Rinse your mouth with water after every meal.
9. Follow a healthy tiffin policy - avoid sugary and sticky food and fizzy drinks, especially between meals.
10. Visit your dentist regularly, at least once a year.

1.1 Understanding personal hygiene practices
1.2 Oral care

Worksheet 1 - Harmful oral care practices

Make a list of inappropriate practices which harm the teeth and the mouth (Group work)

Sr. No.	Practices which can harm our teeth	Practices which can harm our mouth
	 *https://plus.google.com/117938705277138334167*	 *http://www.qmedicine.co.in/top%20health%20topics/M/Mouth%20(Oral)%20Cancer.html*
1		
2		
3		
4		
5		
6		

Handout 1 - Brushing and flossing techniques

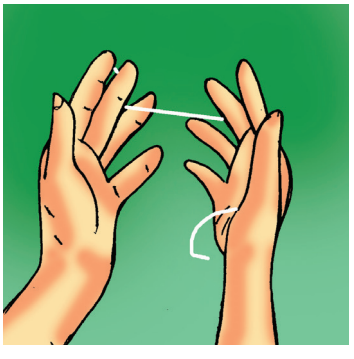
Proper Brushing Technique

Tilt the brush at a 45° angle against the gumline and sweep or roll the brush away from the gumline.

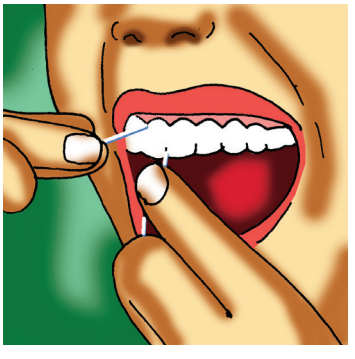
Gently brush the outside, inside and chewing surface of each tooth using short back-and forth strokes.

Gently brush your tongue to remove bacteria and freshen your breath.

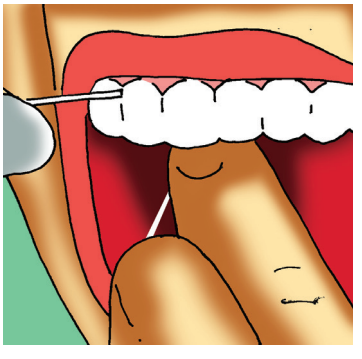
Proper Flossing Technique



Use about 18" of floss, leaving an inch or two to work with.



Gently follow the curves of your teeth.



Be sure to clean beneath the gumline, but avoid snapping the floss on the gums.

http://foothillfamilydentalgroup.com/what-is-good-oral-hygiene/proper_brushing_flossing_sm/

Worksheet 2: Poster on oral cancer awareness

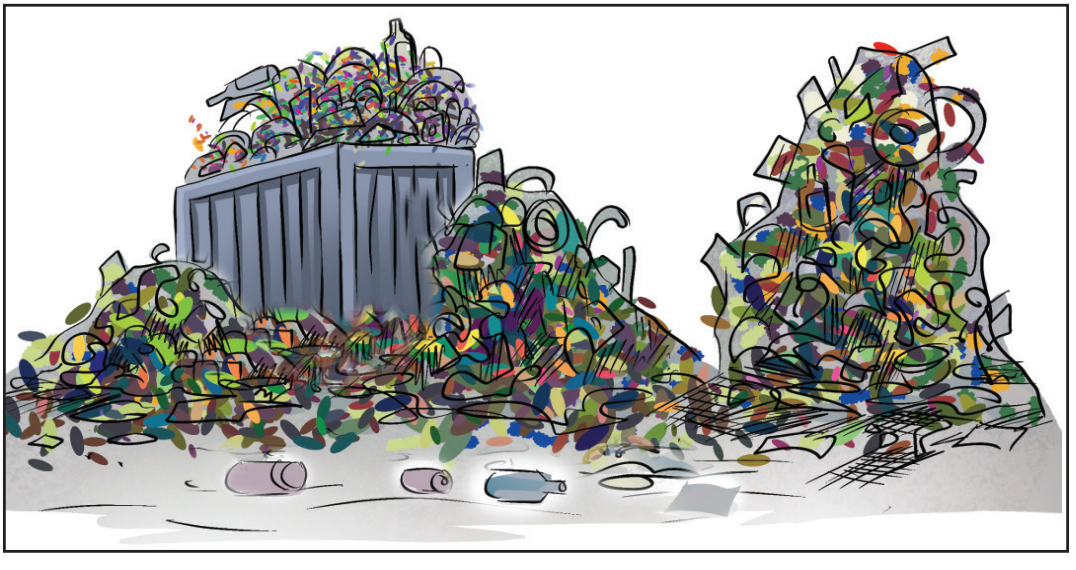
Prepare a poster on oral cancer by referring to the video and the information book.

Topic 2 - Introduction to waste and product lifecycle

2.1 Introduction, types, sources of waste, effects of poor waste management
2.2 Waste segregation and treatment
2.3 Zero waste and 4 'R's
2.4 Packaging and how to avoid wasteful packaging

2.1 Introduction, types, sources of waste, harmful effects

What is waste? How is it generated?



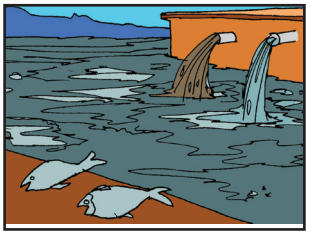
Waste is defined as discarded material which has no value in normal or ordinary use. Waste refers to items we (individuals, offices, schools, industries, hospitals, etc.) don't need and therefore discard. Waste comes in infinite sizes - it can be as small as a pin or as large as the body of a school bus. It is often also called trash, garbage, rubbish, or junk. It can be solid, liquid, or gaseous, or it can be waste heat.

Type of wastes

Generally, waste would be liquid or solid. Both of them could be hazardous.

Below are the different types of waste generated:

Liquid type: Waste can come in liquid form. Some solid waste can also be converted to a liquid waste form for disposal. It includes point source discharge (a single, identifiable source of pollution) and non-point source discharges (not easily attributed to a single source). Examples of liquid waste include wash-water from homes, liquids used for cleaning in industries, and waste detergents.



Liquid waste

Solid type: Solid waste, predominantly, is any garbage, refuse or rubbish that we make in our homes and other places. These include old car tyres, old newspapers, broken furniture and even food waste.

Solid waste

Hazardous type: Hazardous or harmful waste is waste that can potentially threaten public health or the environment.
Waste is also classified into the following categories -

1. Organic/Inorganic

Organic waste: This comes from plants or animal sources. Commonly, it includes food waste, fruit and vegetable peels, flower and plant, trimmings, etc. it is biodegradable (this means it is easily broken down by other organisms over time and turned into manure). Many people turn their organic waste into compost and use it in their gardens.

Organic waste

Inorganic waste: This is the waste consisting of materials that are difficult to biodegrade, so its decompostion takes a very long time. Waste (such as sand, glass, or any other synthetic material) that consists of materials other than plant or animal matter, such as pieces/ plates of metal, various kinds of stones, glass shards, bones, tin cans and bottles fall in this category.

Inorganic waste

2. Recyclable/Non-recyclable

Recyclable: Recycling is the processing of materials (waste) into new, useful products. Waste that can be potentially recycled is termed "recyclable waste".

Aluminium products (like soda, milk and tomato cans), plastics (grocery shopping bags, plastic bottles), glass products (like bottles, broken glass), paper products (used envelopes, newspapers and magazines, cardboard boxes), etc., can be recycled and fall into this category.

Non-recyclable: Those items that cannot be recycled, such as wrapping, bags and packaging (plastic, card), dirty, wet paper, cardboard, bone china ceramics, window, mirror, cars, windscreen glass, diapers, vacuum cleaners' dust bags, cigarette ends, chewing gum, disposable plates, light bulbs, spray bottles, unusable clothing and footwear, drink cartons, etc., fall into this category. They are called 'non-recyclable' because the recycling process is either very difficult or very costly.

3. **Biodegradable/Non-Biodegradable waste**

Biodegradable waste: This is a type of waste typically originating from plant or animal sources, which may be degraded by other living organisms.

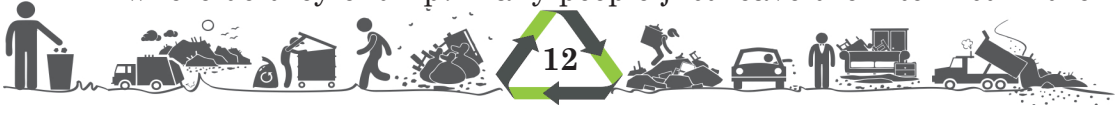
Biodegradable waste can be commonly found in municipal solid waste such as green waste, food waste, paper waste, and biodegradable plastics. Other biodegradable wastes include human waste, manure, sewage and slaughterhouse waste.

Non-biodegradable waste: Unlike biodegradable waste, non-biodegradable waste cannot be easily handled. Non-biodegradable wastes are those which cannot be decomposed or dissolved by natural agents. They remain on the earth for thousands of years without any degradation. Hence, the threat caused by them is also more serious.

Most of the inorganic waste is non-biodegradable. Non-biodegradable wastes which can be recycled are known as "recyclable waste", and those which cannot be recycled are known as "non-recyclable waste".

Sources of waste

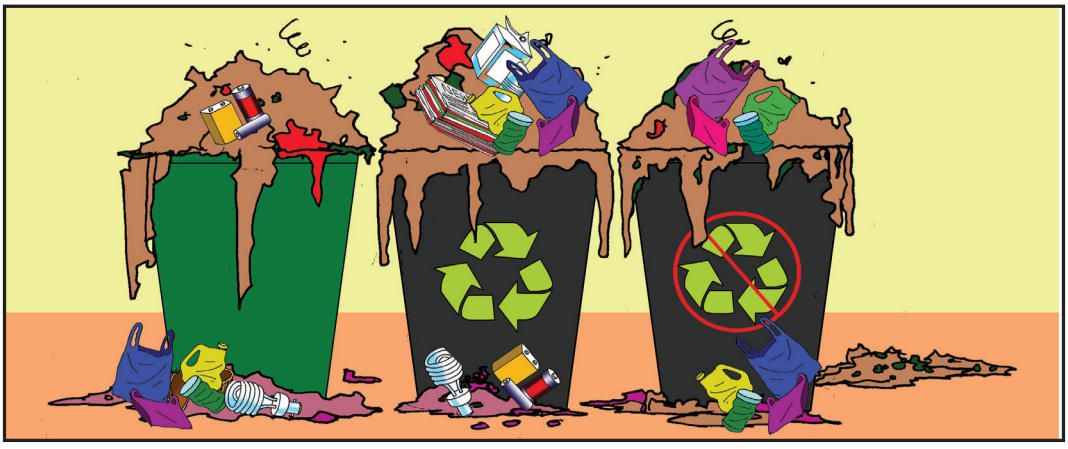
1. **Municipal waste:** This includes trash or garbage from households, schools, offices, marketplaces, restaurants and other public places. It contains everyday items like food debris, used plastic bags, soda cans and plastic water bottles, broken furniture, grass clippings, product packaging, broken home appliances and clothing.
2. **Medical/clinical waste:** Medical/clinical waste normally refers to waste produced in healthcare facilities, such as hospitals, clinics, surgical theatres, veterinary hospitals and labs. They tend to be classified as hazardous waste rather than general waste. Items in this group include surgical items, pharmaceuticals, blood, body parts, wound dressing materials, needles and syringes.
3. **Agricultural waste:** Typically, this is waste generated by agricultural activities which include horticulture, fruit growing, seed growing, livestock breeding, market gardens and seedling nurseries. Waste items in this group include empty pesticide containers, old silage wrap, medicines after the date of expiry and wormers, used tyres, surplus milk, cocoa pods and corn husks.
4. **Automotive scrap:** When cars are old and not working anymore, where do they end up? Many people just leave them to rust in the



fields, but there is a better way to deal with them. In many cities, these vehicles are sent to the plant, where all the removable parts are taken out for recycling. The rest is flattened and shredded into pieces for recycling. The last bits that cannot be used again are sent to a landfill.

5. **Industrial waste:** Since the industrial revolution, the rise in the number of industries manufacturing glass, leather, textile, food, electronics, plastic and metal products has significantly contributed to waste production. Take a look at the things in your home; every item there is probably factory-manufactured and waste was probably produced as a result.
6. **Construction/demolition waste:** Construction waste is waste resulting from the construction of roads and buildings. Sometimes, old buildings and structures are pulled down (demolished) to make space for new ones. This is particularly common in old cities that are modernising. This is called demolition waste. Waste items include concrete debris, wood, earth, huge packaging boxes and plastics from the building materials.
7. **Electronic waste:** This is waste from electronic and electrical devices. Think of DVD and music players, TV, telephones, computers, vacuum cleaners and all the other electrical/electronic stuff in your home. These are also called e-Waste, E-Scrap, or waste electrical and electronic equipment. Some e-Waste (like TV) contains lead, mercury, cadmium, etc. These are harmful to humans and the environment. It is therefore important that the right authorities ensure the proper disposal of such waste.

Effects of poor waste management in India



Waste dumps have adverse impacts on the environment and public health, such as -

1. Open dumps release methane gas from decomposition of biodegradable waste under anaerobic conditions. Methane causes fires and explosions and is a major contributor to global warming.
2. There is also the problem of bad odour and contamination of water bodies due to leachates (the liquid that drains or leaches from a landfill).
3. Discarded tyres at dumps collect water, allowing mosquitoes to breed, increasing the risk of diseases such as malaria, dengue and West Nile fever.
4. Uncontrolled burning of waste at dump sites releases fine particles which are a major cause of respiratory diseases and also cause smog.
5. The impact of poor waste management on public health can be see in the high incidence of nose and throat infections, breathing difficulties, inflammation, bacterial infections, anaemia, reduced immunity, allergies, asthma, and other infections.

2.2 Waste segregation and treatment

Waste segregation: Dry and wet waste segregation

By now, we all know the hazards of waste material on our environment and thus on each one of us. In the long run, we have to work together to effectively and efficiently segregate (divide) the waste into dry waste and wet waste.

Segregation in simple language means separation of waste into "Dry" and "Wet", so that it is easier to handle later.

Dry waste can be further segregated into "Recyclable" and "Non-Recyclable"dry waste.

What goes in which category?

(Source - GWMC Greater Warangal Municipal Corporation)

Waste treatment: Composting, recycling and trash

1. Composting

Wet waste which goes into composting is biodegradable, organic waste (this means it can be broken down). It is sent to a location where it is then decomposed, and as a result, recycled into nutrient-rich soil that can be used to fertilise plants and crops.

1.1 Compostable items:

a. Vegetables

b. Some paper

c. Fruit rinds

d. Grains

e. Coffee filters/tea bags/loose leaf tea

In other words, many items can be thrown into the compost bin. For the most part, almost any food (except cooked meat and dairy) is compostable.

2. Recycling

Like composting, recycling turns waste into more recyclable, useful material. From one item to the next, this process helps reduce the amount of overall waste in the world.

What can be recycled?

a. Metals
b. Paper
c. Aluminium cans, metal cans
d. Glass bottles and jars, plastic bottles and jugs
e. Electronic devices (Special note: These devices have a special recycling process, and should be recycled separately from regular waste.)

3. Trash

Everything that's left after the above two processes goes into landfills and is called trash! Hopefully, after recycling and composting, there won't be much to throw away.

2.3 Zero-waste and 4 'R's

Zero-waste

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

Zero-waste means designing and managing products and processes to avoid and eliminate the volume and poisonous nature of waste. It also means conserving and recovering all resources from waste, and not burning or burying them. Zero-waste maximises recycling, minimises waste, and reduces consumption. It promotes the making of products which can be reused, repaired or recycled back into nature.

Implementing zero-waste will eliminate all discharges to land, water or air that could otherwise be a threat to our planet, humans, animals and plants.

Benefits of a zero-waste community

- **Connecting people:** Zero-waste efforts encourage greater community involvement, partnerships, innovation, and sharing of materials.

- **Building prosperity:** Creates eco-friendly jobs, local development, and reduces costs related to the management of our waste.
- Protecting the environment: Reducing the amount of waste sent to the landfill or incinerator will help cut greenhouse gas emissions (GHG). It will make our air cleaner.

Why we need to shift towards zero-waste

- Waste disposed of at landfills and incinerators creates GHG emissions with a harmful climate-changing impact.
- Valuable materials are often disposed of incorrectly, and their value is lost when buried in the landfill or burned at the incinerator.
- If we think about our waste in terms of value and resources, we should waste nothing and always choose to save by re-using or recycling.
- Materials that can be used in the manufacturing processes should always be recycled efficiently. They should either be safely returned to the industries or nature.

In the previous class, we learnt the 3 R's - Reduce, Reuse, Recycle. Now let us take a step towards a zero-waste lifestyle by adopting 4 R's and start 'refusing' waste also.

The 4 R's:

1. **Refuse:** Refusing waste is often seen as a "radical" choice. This choice is a powerful one in that you refuse to take on the responsibility of waste and only wish to receive the products you need.

There are many ways you can reduce the amount of waste you create -

a. Say no to disposable shopping bags. carry your own reusable ones instead.

b. Choose products that have the least amount of packaging.

c. Whenever possible, buy unpackaged lose items.

d. Buy unpackaged items in loose containers when available.

e. Use what you already have instead of buying something new, whenever possible.

2. Reduce: As you gain a better understanding of what waste is and the impact it has on our natural, economic and social environment, reducing becomes a deliberate choice. Reducing waste allows you to participate at all levels.

3. Reuse: To reuse means to continue using the products you have, instead of disposing them of and buying new ones. Purchase reusable (rather than disposable) products such as mugs, dishes, cloth napkins, and metal flatware instead of paper cups, plates, and napkins, and plastic utensils. Use refillable containers, like water bottles and soap containers, whenever possible. Mend clothing and repair appliances and other products so that they can be reused, and find creative ways to reuse items you might otherwise throw away.

4. **Recycle:** Though recycling is the last "R" in this thought process, it has become the most commonly used element. Recycling is very important in eliminating waste and will always be part of the ongoing process.

2.4 Packaging and how to avoid wasteful packaging

Packaging

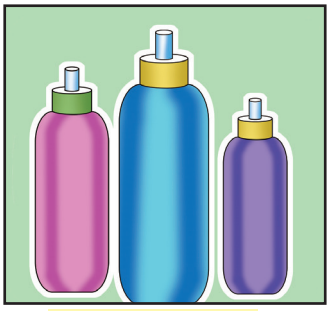
Packaging refers to the wrapping material around a consumer item that serves to contain, identify, describe, protect, display, promote and otherwise make the product marketable and keep it clean.

Manufactured products are prone to damage and need to be enclosed so that they can be kept safe from frictions, vibration, shock, compression, weather conditions, temperature, moisture and electrostatic discharge.

The purpose of product packaging is to protect the product from damage. Product packaging not only protects the product during transit from the manufacturer to the retailer, but it also prevents damage while the product sits on retail shelves. Most products have some form of packaging.

The packaging enables the product to be stored, handled with ease, transported safely and beautifully displayed on the shelves for the purpose of sale.

Types of packaging materials

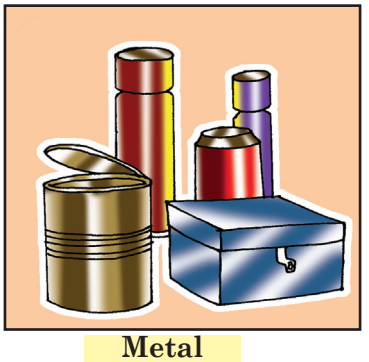


Plastic

1. **Plastic**

   This is the most common packaging material and, at the same time, one of the most difficult to dispose of. The factors common to all plastics are that they are light, strong and cheap to manufacture. It is for these reasons that they are used so much, as an alternative to cardboard or glass packaging materials.

   Almost 10 percent of our rubbish consists of different types of plastic. Plastic is a problem in landfills as it is bulky, contaminating and degrades slowly.



Metal

2. **Metal**

   It is appropriate for packaging foods (canned foods). For drinks (such as soft drinks), aluminium is often the preferred choice. Tinplate is solid, heavy steel covered with tin to protect it against rust. It is used to package canned foods. It can be separated by magnets and should be recycled in all cases.

Aluminium is attractive, light and strong but at the same time requires a lot of raw materials and energy to make. For this reason, it must be recycled. The majority of cans of soft drinks, lids, aluminium foil, etc., are made of aluminium.

3. Tetra Paks

Tetra Pak is a light, strong, air-tight packaging material, ideal for transport storage. It is used mainly to keep drinks such as milk, juice, etc. It is becoming the main packaging material used for basic foodstuffs.

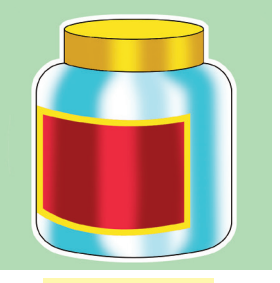
Complex packaging material is made up of several layers of plastic, paper or aluminium. The complex composition of Tetra Pak makes it difficult to recycle.

4. Cardboard

It is appropriate for packaging and wrapping materials. This packaging material is easy to recycle and reuse. It is used in the form of boxes, sheets and corrugated cardboard.

5. Glass

Glass is an ideal material for foods, especially liquids. It is inalterable, strong, and easy to recycle. It is the traditional vessel in homes (jars, glasses, jugs, etc.). The weight, shape etc of glass may cause some difficulties for transport storage.



Glass

Waste degradation time

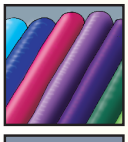
How long until it's gone?

Glass bottle ..... 1 million years

Plastic bottle ..... 450 years

Aluminium can ..... 80-200 years

Leather shoes ..... 50 years



Nylon fabric ..... 30-40 years

Cigarette filter ..... 1-5 years

Orange peel ..... 2-5 weeks

Paper sheets ..... 2-4 weeks

The pitfalls of excess packaging

In addition to generating tons of waste, packaging negatively impacts the environment in several other ways:

1. It drains natural resources (including water and oil).
2. It requires a lot of energy and generates greenhouse gas emissions (thereby contributing to climate change).
3. If discarded as litter, it can harm wildlife and pollute our air, water, and soil.

The benefits of reduced packaging

As you can imagine, reducing packaging benefits human health and the environment in the form of:

1. Less waste in landfills
2. Less pollution of air, water, and soil
3. Fewer carbon emissions during the manufacturing process
4. Fewer carbon emissions during the transportation process (because slimmer packages increase the number of items that can be shipped in one truck, thereby reducing the need for additional vehicles)
5. Less extraction of natural resources

How to reduce packaging waste in your daily life

While it's critical that companies do their part to reduce packaging waste, we too can help out by putting a few of these simple things into practice:

1. **Start with recycling -** This step is a no-brainer. Glass, aluminium, paper, and most plastic can be recycled. Take the time to do your part, and don't forget to get your friends and family members involved too.
2. **Opt for recycled, recyclable, or biodegradable packaging -** When you do buy, look for these types of products. For example: consider purchasing oil/ghee in glass jars that can be reused as cups or vases, choosing packaging made from post-consumer waste, or buying products in compostable packaging.

3. **Choose reusable products -** The less often you have to buy a product, the less packaging you'll bring home. It's not always possible, but try to avoid disposable options and choose longer-lasting versions instead.
4. **Buy less stuff -** Easier said than done, of course, but thinking before you buy is never a bad idea. This is easily the most effective way to reduce packaging waste.
5. **Buy in bulk -** Sometimes, convenience is key. But when possible, shopping from bulk containers and purchasing concentrates that can be diluted at home to refill your smaller bottles can actually make a huge difference.
6. **Take your own bags and containers when shopping -** This helps with buying in bulk and reduces your use of plastic or paper bags (essentially another form of packaging).

   You can even take your own mug or thermos when you get coffee or carry containers to restaurants if you think you might take home leftovers.
7. **Ditch plastic water bottles -** Try using a glass or reusable water bottle.
8. **Buy used or borrow/rent products -** Try to buy or seek out used/rented materials in good condition from friends/ stores. This will help you save money as well as reduce waste in manufacturing new products.
9. **Maintain and repair existing products -** When something breaks, view it as an opportunity to learn a new skill before purchasing a new (packaged) product. For example, if your radio breaks down, maybe you could learn to repair it.

2.1 Introduction, types, sources of waste, effects of poor waste management
2.2 Waste segregation and treatment
2.3 Zero-waste and 4 R's
2.4 Packaging and how to avoid wasteful packaging

Record sheet: Activity 1 - Visit to recycling centre/Video of recycling centre

Write your learning and experience of the visit/video of the recycling centre here:

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Worksheet 1 - Letter to Municipal Corporator/Village Sarpanch

Write a letter to the Municipal Corporator or village Sarpanch to show your concern about the waste disposal problem of your community. Also, suggest some action points to be implemented in your community/village.

Date - .....

To,

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.....

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Subject - .....

Dear Sir/Madam,

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.....

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Waiting for your response

Thanking you,

Yours faithfully,

.....

Address - .....

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Worksheet 2 - News analysis

Collect newspapers from last week and search for news stories related to waste problems in India or any other country. Select any one news report, article or story and write about your understanding of it in your own words, along with the action points required to solve the problem.

Date - .....

Type of news item - .....

Name of newspaper - .....

Topic - .....

Problem stated -

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Action points to solve the issue in your opinion -

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Your learnings in the case of this story (Or leave the space blank) -

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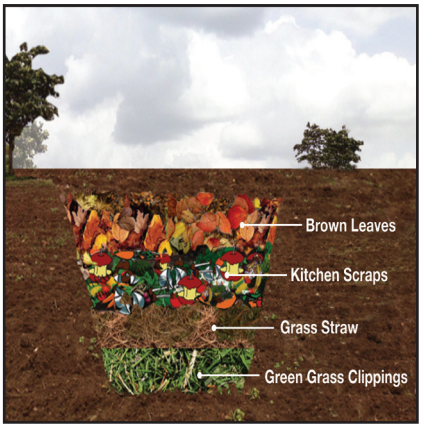
Topic 3 - Composting and kitchen gardening

Composting



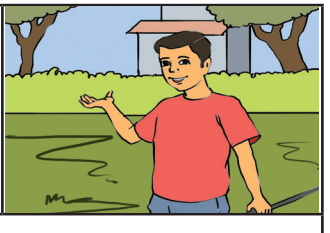
Composting is a natural method of recycling decomposed organic materials into a rich soil known as compost. Anything that was once living will decompose. By composting your organic waste, you are returning nutrients back into the soil in order for the cycle of life to continue. Finished compost looks like soil - dark brown, crumbly, and smells like a forest floor.

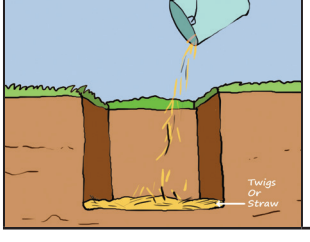
Types of composting:

1. **Backyard composting** - If you have a yard, you can find and collect fallen leaves, straw, grass clippings and food scraps and turn them into compost in your yard.
2. **Worm composting (vermicomposting)** - If you have a tiny yard and have lots of food scraps, this type of composting is for you. It involves the use of earthworms to convert organic waste into fertiliser.
3. **Grasscycling** - If you have grass clippings and don't want to use them in a compost pile, you can leave them on the lawn/ garden to decompose.

How to compost?

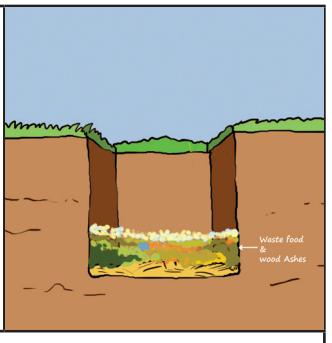
1. Start your compost pile on bare earth. This allows worms and other beneficial organisms to aerate the compost and be transported to your garden beds.

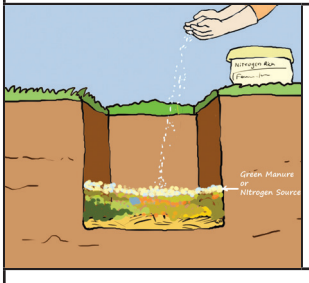




2. Lay twigs or straw first, a few inches deep. This aids drainage and helps aerate the pile.

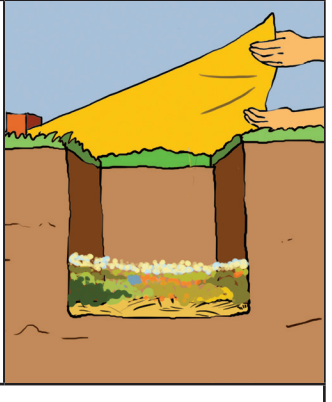
3. Add compost materials in layers, alternating moist and dry. Moist ingredients are food scraps, tea bags, seaweed, etc. Dry materials are straw, leaves, sawdust pellets and wood ashes. If you have wood ashes, sprinkle them in thin layers, or they will clump together and be slow to break down.

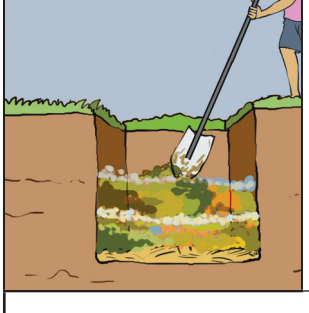




4. Add manure, green manure or any nitrogen source (like chicken droppings, corn gluten meal or nitrogen-rich granular fertilisers available in garden stores). This activates the compost pile and speeds the process along.

5. Keep compost moist. Water occasionally. Cover it with anything you have - wood, plastic sheeting, carpet scraps, etc. Covering helps retain moisture and heat, which are the two essential components for compost. Covering also prevents the compost from being over-watered by rain. The compost should be moist, but not soaked and heavy with water.





6. Every few weeks, give the pile a quick turn with a pitchfork or shovel. This aerates the pile. Oxygen is required for the process to work, and turning “adds” oxygen. You can skip this step if you have a ready supply of coarse material, like straw.

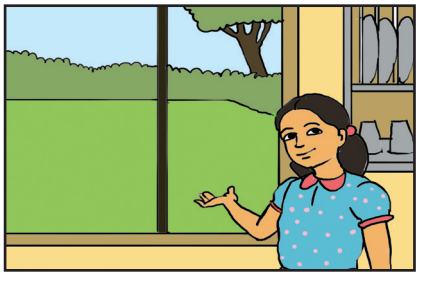
7. Once your compost pile is established, add new materials by mixing them in, rather than by adding them in layers. Mixing or turning the compost pile is key to aerating the composting materials and speeding the process to completion.

Benefits of composting

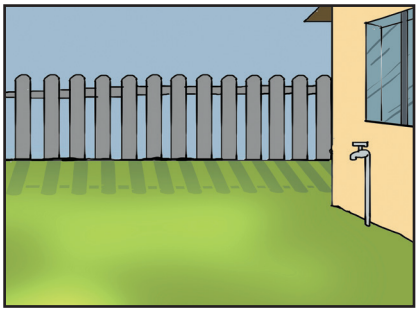
1. Yard and food waste make up 30 percent of the waste stream. Composting your kitchen waste helps divert this waste from the landfills, waterways and water treatment facilities.
2. You will significantly reduce pest problems and your use of pesticides.
3. Healthy plants from healthy soil look better, give better produce and have a much greater ability to fight off pests and diseases.
4. Adding organic materials to the soil improves moisture retention.
5. Adding decomposed organic material to the soil feeds beneficial organisms.
6. Compost improves both sandy and clay soils.
7. Compost also binds nutrients in the soil and holds them in for a longer duration.
8. Composting saves money; you avoid the cost of buying fertilisers and manure.
9. Feeding your plants well will improve your own diet. Plants grown in depleted soils have a reduced nutrient content.

How to make a kitchen garden?

A kitchen garden is a garden or area where vegetables, fruits or herbs are grown for domestic use.



Easy steps to make a kitchen garden -



1. Decide on the location.

a. A kitchen garden should be in a sunny spot with a water source nearby and be easy to access.

b. A protected area, such as one near the house or near a fence, will help keep animals and pests away from the garden while attracting pollinating insects such as bees.

2. Determine the type and size of your garden.

a. This will depend on the location you choose.

b. Kitchen gardens can be small or large and can be in containers, a raised bed or the ground.

c. Raised garden beds are an easy way to start your garden since they are smaller and do not involve tilling. Raised beds can be made from cut wood or purchased as a kit from your local home improvement or garden store. Soil is added to the bed and should be replenished as needed.

3. Prepare the area.

a. Kitchen gardens should have rich, fertile soil that is well drained.

b. Use a shovel or spade to turn over the dirt in the area. If necessary, till the area and break up large clumps of soil to allow for better drainage. Remove weeds, including their roots, to prevent them from returning.

c. Add compost or topsoil to make the area richer. Use a handtill to mix the soil. If you're using a raised box or containers, the soil should be replaced or replenished to maximise the nutrients available for the plants.

4. **Pick the type of plants and flowers you want to have in your garden.**

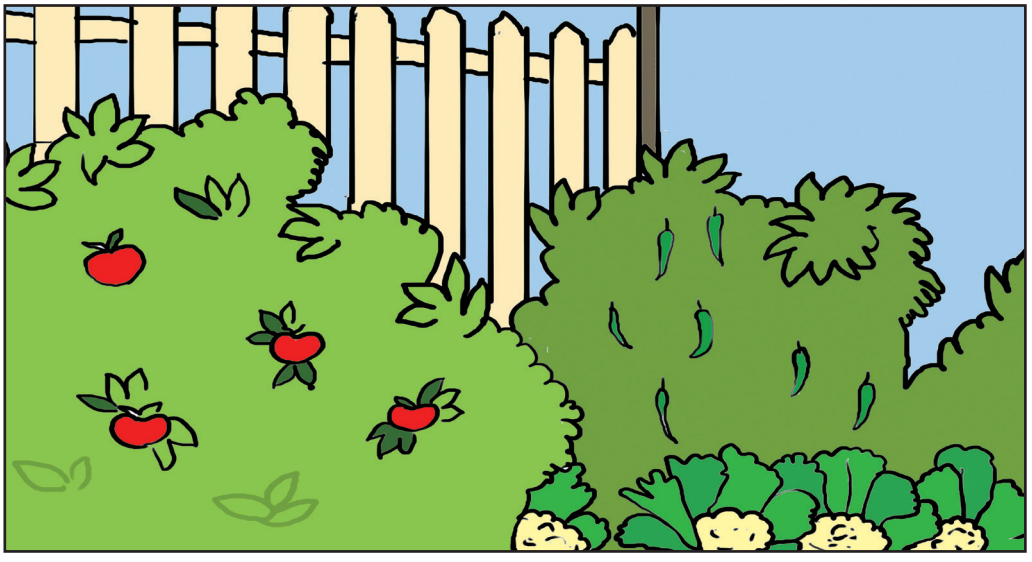
   a. Take the climate and the growing season in your area into consideration when choosing vegetables.
   b. Include plants that you plan to use in your cooking. Kitchen garden ideas include tomatoes, peas, chillies, capsicum, cucumbers, cabbage and herbs.
   c. Buy seeds online or find seeds or seedlings at your local nursery.
   d. Combine flowers and vegetables for healthy partnerships and for a pleasant look. This is known as a "potager" style garden. This kind of "companion planting" can be beneficial for your harvest. Be careful, as certain types of flowers can attract pests that harm the vegetables.
   e. Perennial fruit trees and flowers can be used as border plants. They will return each year.

5. **Plan the arrangement of your plants and hardscape elements.**

   a. Consider the mature height and spread required for the different plants. Remember to leave room to access your plants for harvesting.
   b. Decide which plants may need a trellis (frame/railing) and find the right spot for it.
   c. Determine how you will use plants and hardscape edging to define your garden space and design pathways for your kitchen garden.

6. Plant your vegetables and flowers.

a. Water your plants before planting to loosen the root balls.



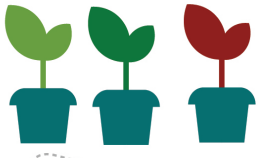
b. Pay attention to plant spacing and timing, which will vary across plants. Plant the vegetables or flowers by digging holes with a plant spade that are wider than the root ball and just as deep. Fill soil back into the hole (around the plants) and pat the soil down. Add mulch (a layer of material such as grass clippings, leaves, etc., that is applied to the surface of the soil) to protect the plants and keep moisture in.

c. Water the new plants immediately. Continue watering regularly, but do not over-water.

7. Harvest your kitchen garden as the vegetables mature. Harvest times will vary depending on the vegetables, the timing of plantings, and your location. If you include a variety of plants, you can enjoy fresh vegetables and flowers from your garden throughout the growing season.

Handout 1 - Gardening tips

GARDENING TIPS



1 Deciding what to grow

When planting a vegetable garden, start small. Take a look at how much your family will eat and plant the crops accordingly.

2 Determine how much space you need

A garden with vegetables does not require a large space. If you choose to grow vegetables in containers, you don't even need a yard - a deck or balcony may provide plenty of space.

3 Testing and fixing your soil

It's best to test the soil before you begin to plant a vegetable garden.

4 Choosing varieties

Get your vegetable seeds from nurseries and shops. Follow the instructions on the seed packets.

5 Care and feeding

Most vegetables like a steady supply of moisture. Fertilise your plants for maximum yield. But don't apply more than the recommended amount of fertiliser as doing this can actually decrease yield.

6 Harvesting

If it looks good enough to eat, it probably is. Give it a try and enjoy the vegetables of your labour!

Worksheet 1 - Essay and learning

Write a short essay on composting based on your learning in class.

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Your learnings from the agricultural farm visit:

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Worksheet 2 - Compost bin

Draw a compost bin in the space below. Then, write in the columns below what goes into your compost bin and what doesn't.

What goes into compost bins	What doesn't go into compost bins

Worksheet 3 - Success story

Bio-intensive gardening makes school fun in Karnataka

Siddappa, a pump operator with the water works department in Gundahalli village, Gulbarga, Karnataka has a vegetable garden right under the water tank he operates. Ask him where he got this idea from and he points to his son Manjunath, who studies in the village government school. Manjunath is one of many students at the school who enthusiastically take care of the vegetable garden started by the school teachers. The teachers were trained by UNICEF in bio-intensive gardening under the SWASTHH Plus (School Water and Sanitation towards Health and Hygiene) Programme.

The initiative was launched by UNICEF in 2005 in 120 schools of Gulbarga, 200 schools of Raichur and 80 schools in Tumkur districts of Karnataka. Students have found a new reason to come to school. They troop in early before regular classes begin so that they can tend to the plants sown by them. Headmaster Chandrashekhar Swamy says he never thought that such a simple thing could help in upping the retention rates. He says, "The girls have total ownership of the garden here and are really motivated to water and weed the plants and take immense pride in their vegetables. They don't like to miss school for a single day."

Parents too are in full support of the gardens which are helping their children have nutritious mid-day meals. At times, the harvest is so good that extra vegetables are distributed in the village.

(Source - http://unicef.in/Story/809/Bio-intensive-gardening-makes-school-fun-in-Karnataka)

What inspires you about the above story?

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How can you support your school in setting up a kitchen garden? What materials are required to set one up in your school?

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