

Garbage In, Garbage Out

16

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INTRODUCTION

Look the garbage in the kitchen and in other rooms. What kinds of waste do they contain ? What happens to the waste ?

Every day, we throw away things we do not need, for example bags, broken glass pieces and much more. In cities, this garbage is collected and thrown into garbage dumps. From there, it is collected by the municipal authorities for disposal. But the amount of garbage is huge. Disposing it off is therefore, an immense problem. If it is burnt it generates smoke and poisonous gases, and pollutes the air, if it is thrown into a river or the sea it pollutes the land and also affects ground water. Beside a huge amount of land will be required for this purpose.

WASTE

Any material which cannot be used in the form in which it is produced is called a waste. Waste cause soil water and air pollution and is passing a serious threat to normal way of life of plants, animals and human beings.

SOURCES OF WASTE GENERATION

1. Domestic waste which includes peels of fruits and vegetables left over food, wrappers etc.
2. Agricultural waste which includes cow dung, straw, leftover roots and plants.
3. Industrial waste which includes waste from industries.
4. Sewage, garbage etc.





Activity Time

To estimate the quantity of solid waste generated by your family.

Ask all the members of your family to put all the solid wastes in the empty bucket. When the bucket gets filled up, take its weight and record. Repeat the process for one month. After one month, add all the wastes which you have recorded over the month. This will give you in Kg. the amount of solid waste produced by your family.

Perform this activity on actual basis and record your finding.

Do You Know ?

Paper pieces would take about 2-5 months to complete biodegradation. Leather shoes may take 30-40 years. Glass bottles are expected to take 1 million years for biodegradation.

REDUCING WASTE BY RECYCLING

When you buy something the shopkeeper usually give it to you in a plastic bag. If you throw away the bag on returning home, you generate garbage. However if you use the bag, the next time you buy something and you do not take a new bag from the shopkeeper. You reduce garbage, in this case you have reduced garbage, by using waste glass to make new glass bottles by melting them also reduces garbage. Waste paper can be using recycled to make envelopes.

Recycling involves using waste materials to make new products. It is a very effective method of reducing waste and help in making the environment cleaner.

SEGREGATING WASTE

The first implementing and kind of reduction in garbage is to segregate the garbage into bio-degradable and non-bio-degradable. This is because the two kinds of waste require different methods of disposal, As this segregation has to start from home, every household should have two garbage bins – one for degradable waste and the other for non bio-degradable waste.

BIODEGRADABLE WASTE

A few decades back the waste produced was not a big environmental hazard because people used things directly from nature for example they cooked food in earthen vessels and ate their food

on plate made out-of leaves. Although these things were used and discarded was waste. They did not affect the environment-adversely. This is because such thing break down naturally and become a part of the soil. In the process plant-nutrients in the soil increase and the soil became more fertile. Things that get broken down or degraded naturally are called biodegradable such waste is also called organic waste. Most metals are also biodegradable.



Biodegradable wastes

NON-BIODEGRADABLE WASTE

Non-biodegradable waste does not rot and mix with the soil. It includes plastic bags, plastic packing material, metal containers glass bottle, broken glass pieces and bulbs.

HOW CAN WE CONTROL WASTE?

Although we cannot stop using some things, we can reduce their usage. For example by carrying a cloth bag while buying vegetable and other food items, we can reduce the use of plastic bags.

Reuse

Household waste contains things that can be reused. For example instead of purchasing fancy containers we should use metal tins plastic containers and bottles to store things.

Recycle

Recycling is a method of using waste materials by converting them in new products. It is essential therefore to separate things from the waste before throwing it away. The waste should be collected and sold to vendors who purchase them. These vendors sell the waste to factories that recycle it. Collection of recyclable materials helps in reducing waste.



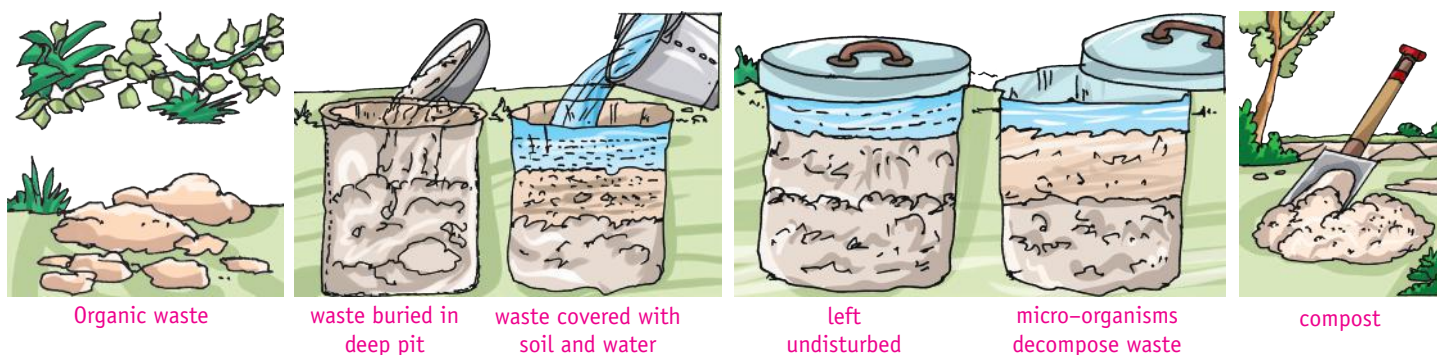
Activity Time

Dig a pit about 3 feet deep in a shaded partition of a garden. Every day add the biodegradable garbage generated in your house, every time you add waste into the pit, cover it with a thin layer of soil. The compost will be ready for use in 34-60 days.



Recycling Biodegradable Waste

Biodegradable waste has a number of nutrients that are good for plants. These nutrients can be recycled back to the soil by allowing the waste to rot in a compost pit. This is thrown and covered with soil. The natural process of rotting occurs and the nutrients in the waste get recycled to yield manure or compost. The method is called composting. The manure obtained is very rich in nutrients and is excellent for plants. Composting is clean, cheap and safe. It considerably reduces the amount of disposable garbage. Recycling a million stock of newspaper save & the equivalent of 10 million pine trees. Making paper from waste instead of wood pulp, yield 80 percent savings of water and energy.



Composting

Vermiculture

Compost can also be produced with the help of earthworms. This is known as vermiculture. Kitchen wastes like vegetable and fruit peels can be used to make vermicompost. The earthworms along with micro-organisms decompose organic waste and convert it into compost in three to four weeks.

Biogas

Biogas is produced from organic waste. It is used as a fuel. It is produced when bacteria decompose organic material in the absence of oxygen gas by producing methane gas. Methane gas is a fuel. Biogas is mainly produced from cow and buffalo dung. Garbage and crop remains can also be used to obtain biogas. Such waste materials are decomposed in a closed container to produce methane gas. The gas is collected and used to cook food and generate electricity. Biogas burns without producing smoke and therefore does not pollute air like other fuels. It is a cheap and clean source of fuel. The residue from a biogas plant is an excellent fertilizer.



Biogas plant

Benefits of Biogas

The process of making biogas kills many disease-causing microorganisms that are found in the waste.

The use of biogas lessens the need to create landfill sites.

Recycling Paper : Used paper can be recycled to make paper again, recycling paper beside reducing waste also helps us to protect nature.

Paper is made from wood. Every year large areas of forest get cleared to obtain wood some of which is used to make paper. Recycling will ensure cutting of lesser trees thus saving forests. Waste paper is also used to make paper made object.

Recycling Metal, Glass and Plastic Waste

Metal waste is separated and heated to a high temperature. The molten metal is then used to make new products. Metal waste from home should not be thrown in the garbage. It must be kept separately and given to metal scrap dealers.

Plastic waste is melted by heating at a certain temperature. The melted plastic is converted into pellets. The pellets are then used in the manufacture of new household products, such as bags, buckets, stationery and furniture.

Waste glass is delivered to the glass melting factories, where it is first sorted manually to remove things like metal or plastic caps. Then the glass waste is passed through a crusher and broken into fine glass powder. The glass is heated and the melted liquid glass is poured into moulds to make new products and articles.

Waste Disposal

Waste from our homes is generally collected by our local municipal authorities through regular waste collection. What happens to the waste that is collected from households ?

Waste is a mixture of many things. It can be separated into four parts.

The waste is dried and metals, plastics and glass are separated from it. Such waste is used as recyclable material. Organic waste such as animal and plant waste is separated and is used to make compost.

Dry waste which contains paper, textiles and wood is used as fuel to obtain energy.

The remaining waste like stones, mud and soil is used in landfills.

Landfilling

At the most basic level, land filling involves placing waste under ground and covering it with soil. The waste is dumped and packed in with the use of bulldozers. Land filling at a large scale can lead to environment contamination.



Dry waste



Landfilling on a large scale can lead to environmental contamination

Incineration

Dry waste which contains paper, textile and wood can be used as fuel to obtain energy. Incineration is the burning of waste. The heat energy released from burning waste can be used to generate electricity. Burning of waste also releases gases which affect the environment.

Disposal of Liquid Waste

The disposal of sanitary sewage, domestic sewage and effluents from factories and commercial premises is done either through the sewer system or through drainage. Most cities have well-planned and government managed sewer system. The liquid sewage from different area and establishments of a city is carried through a pipeline network to water treatment plants.

Disposal of Gaseous Waste

The air in an industrial city contains thousands of pollutants. Common pollutants of air, which are hazardous to human health and which also affect plants, animals and even the soil and water have been listed earlier. They include oxides of nitrogen, oxides of sulphur, hydrogen sulphide, ammonia, carbon monoxide, hydrocarbons, chloroform carbons (CFCs) and the like in addition to suspended particulate matters (SPM).

Earlier, industries used to discharge toxic gases and particulate matters from their chimneys and furnances directly into the air. Exhausts from automobiles and smoke from kitchen are also directly disposed off into the air. With the increasing industrialization and the increasing numbers of vehicles and factories, air pollution causes serious health problems.

Of late, numerous techniques and partices have been developed and employed to control air pollutants. The government has enacted laws to check the emission of pollutants in the air and minimize their impact on human health and the environment. Trees are effective absorbents of air pollutants.

Therefore, tree plantation programmes have been undertaken by the government and non-governmental organizations on a massive scale.

Plastics : A Boon or a Curse

Plastic is a widely used synthetic material which possesses a unique property of being easily moulded and set into any desired shape. It is made of synthetic polymers, which are manufactured mainly from petrochemicals.

Disadvantages

Plastics are non-biodegradable, thus they can persist in the soil for hundreds of years and cause soil infertility.

Polythene bags have earned a bad name for choking drains and causing water-logging.

Animals die by eating plastic waste.

Plastic dumped into the seas cause the death of thousands of sea birds and marine animals every year. What can we do to minimize overuse of plastic and deal with garbage ?

1. We should try to minimize the use of plastic bags. Rather we should avoid using these bags, whenever it is possible to do so without any adverse effect.
2. We should insist shopkeepers to use paper bags. We should carry a cloth or a jute bag when we go out for shopping.
3. We should not use plastic bags to store eatables.
4. We should not throw plastic bags here and there after use.
5. We should never burn plastic bags and other plastic items.
6. We should not put garbage in plastic bags and throw it away.



Know the Keywords :

Waste : Discarded and unwanted materials

Garbage : Waste parts of vegetables, fruits and other organic matter.

Recycling : Conversion of wastes into usable forms.

Vermicomposting : Conversion of organic wastes into manure by worms.

Biodegradable wastes : Wastes which can be decomposed under natural conditions by micro organic.

Decomposers : Organisms causing degradation of organic wastes in the soil.



Point to Remember

- Any material which cannot be used in the form in which it is produced is called a waste.
- Bio gas is produced when bacteria decompose organic material in the absence of oxygen gas by producing methane gas. Methane gas is a fuel.
- Plastics are non-biodegradable thus they can persist in the soil for hundreds of years and cause soil infertility.

EXERCISE TIME

A. Answer the following questions :

1. What are biodegradable wastes ? Give examples.
2. What are non-biodegradable wastes ?
3. What is land filling ?
4. What is incineration ?
5. How is organic waste converted into composts ?
6. How is biogas produced ?

B. Mohan and his friends went to a picnic. They left behind the following wastes. Which of these will not degrade and damage the picnic site ? Why ?

1. Steel spoons
2. Paper plates
3. Paper napkins
4. Tetra packs
5. Mineral water bottles
6. Glass bottles
7. Biscuits and cakes
8. Polythene bags
9. Bread slices
10. Biscuit wrappers
11. Stryofoam cups
12. Cloth napkins

C. Tick (✓) the correct option :

1. Left over food is :
(i) domestic waste (ii) waste (iii) industrial waste
2. A gas produced by cow and buffalo dung is :
(i) L.P.G (ii) biogas (iii) none of these
3. Plastic is :
(i) non-biodegradable
(ii) biogradable
(iii) none of the above
4. The gas produced at a land fill is :
(i) nitrogen (ii) methane (iii) hydrogen
5. Compost is made by :
(i) organic waste (ii) mud (iii) stones



Creative Work

- Visit a slum locality and organise a camp for improving environment condition.
- Make some paper made objects.

Based on Chapters 1 to 8

A. Answer the following questions :

1. What food items do we get from plants?
2. What are pulses?
3. What are carbohydrates?
4. What do you understand by the term deficiency disease?
5. What is jute?
6. Name any two hard and soft materials?
7. What is sieving and where is it used?
8. Write important functions of leaf.
9. How is the root system useful for plants?
10. What is the pelvis?
11. What is a ball and socket joint?
12. Explain why do people use filters at home?

B. Fill in the blanks :

1. _____ animals eat flesh of other animals.
2. Plant fibres are obtained from _____ and _____.
3. The fruits of _____ are about the size of a lemon.
4. _____ of a newspaper is a physical change.
5. _____ can cause many kinds of change.
6. The part of a plant above the ground is called _____.
7. _____ is a herb.
8. Joints of the bones help in the _____ of the body.

C. Match the following :

Column 'A'

1. Milk, curd, paneer, ghee
2. Lions and tigers
3. Carnivores
4. Carrot, Cauliflower and spinach

Column 'B'

- (i) are vegetables
- (ii) eat other animals
- (iii) are all animal products
- (iv) are large carnivores

D. Write 'T' for True and 'F' for False statements :

1. All change take some time to occur.
2. Man is a carnivorous animals.
3. Polyester is a natural fibre.
4. Sherbet is a pure substance.
5. The sugarcane has tap roots.
6. The fingers do not have joints.

E. Tick (✓) the correct option :

1. Twenty one bones make up the :

(i) skeleton (ii) skull (iii) none of these

2. Ovules :

(i) change into seeds (ii) are present in a ovary
(iii) change into fruits

3. Filter paper is used in :

(i) decantation (ii) pure substances (iii) none of these

4. Which of the following objects is transparent?

(i) water (ii) steel (iii) wood

5. A fabric is made up of :

(i) animals (ii) threads (iii) insects

6. Which of the following is a cereal?

(i) cumin seed (ii) black gram (iii) rice

F. Give the symptoms :

1. Beri- Beri
2. Rickets

G. Pick out the odd one :

1. Cotton, jute, wool, hemp
2. Knitting, spinning, jute, weaving

Based on Chapters 9 to 16

A. Answer the following questions :

1. Describe aquatic plants?
2. Explain the term force and its effect?
3. What is velocity?
4. What is reflection?
5. How does a periscope form an image?
6. What do you mean by electric circuit?
7. Who are Magnes?
8. What are magnetic materials?
9. How does a drought occur?
10. Write the importance of water?
11. Describe the use of air?
12. How is biogas produced?

B. Fill in the blanks :

1. Air filled cavities are found in _____ plant.
2. Pull or push is called _____.
3. Light travels in a _____.
4. A pinhole camera is used to see _____.
5. A magnet has _____ poles.
6. _____ of human body is water.
7. Conifers grow in _____.
8. _____ discovered steam engine.

C. Write 'T' for true and 'F' for false statements :

1. Moss and ferns grow in deserts.
2. Car is a translatory motion.
3. Glass is an opaque object.
4. Electricity is not useful for us.
5. The rock was a natural magnet.
6. Gases can not dissolve in water.



D. Tick (✓) the correct option :

- A kite flying in the sky shows :
(i) linear motion (ii) translatory motion (iii) circular motion
- A pinhole camera is a very simple :
(i) device (ii) machine (iii) computer
- An electrical appliance that keeps electrical circuit off and on is called :
(i) switch (ii) bulb (iii) battery
- Which is not a magnetic material?
(i) Cobalt (ii) Zinc (iii) Iron
- Percentage of water in the human body is :
(i) 20% (ii) 60% (iii) 70%
- Compost is made by :
(i) organic waste (ii) mud (iii) stones

E. Encircle the odd one :

- | | | | |
|------------------|-----------------|---------|----------------|
| 1. Nitrogen | oxygen | water | carbon dioxide |
| 2. Air pollution | water pollution | current | soil erosion |
| 3. Wood | bulb | current | light |
| 4. Copper | aluminium | glass | mercury |