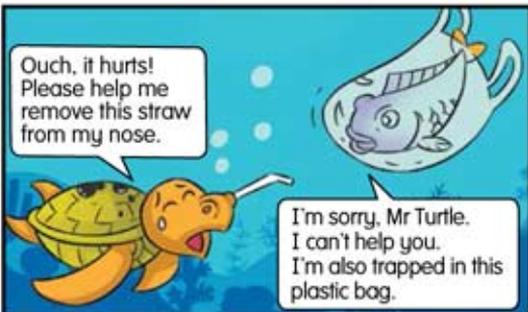


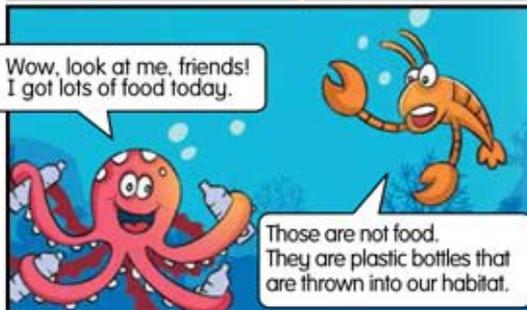


Oh, dear! There's a big net stuck to my tail.



Ouch, it hurts! Please help me remove this straw from my nose.

I'm sorry, Mr Turtle. I can't help you. I'm also trapped in this plastic bag.

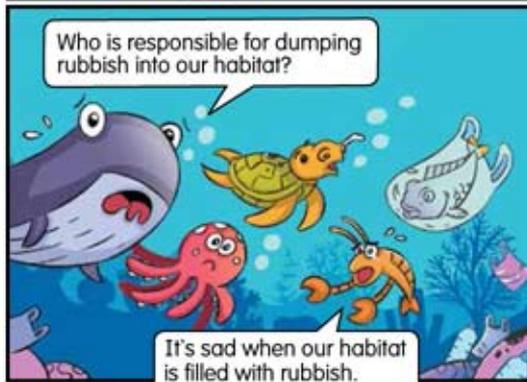


Wow, look at me, friends! I got lots of food today.

Those are not food. They are plastic bottles that are thrown into our habitat.

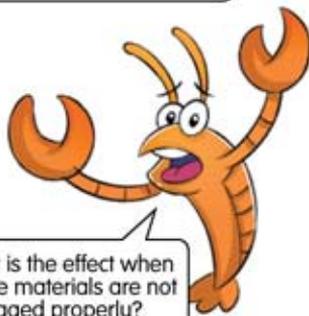


Apart from plastic bottles, many plastic bags are also thrown here.



Who is responsible for dumping rubbish into our habitat?

It's sad when our habitat is filled with rubbish.



What is the effect when waste materials are not managed properly?

Managing Waste Materials

A lot of garbage is thrown away every day. Garbage is a type of waste material.

What is the meaning of waste material?



Waste materials are materials that we no longer need and want to keep. Waste materials can be categorised based on their types.



Glass

Examples of glass waste are glass bottles and drinking glasses.



Metal

Examples of metal waste are aluminium, cans, and scrap metals.



Paper

Examples of paper waste are newspapers, boxes, books, and magazines.

WASTE MATERIALS



Faeces

Faeces is the waste matter of humans and animals.



Plastic

Examples of plastic waste are plastic food containers and plastic bottles.



Food waste

Food waste is domestic waste such as onion skin, chicken bones, egg shells, leftover vegetables, and used cooking oil.



Toxic waste

Toxic waste such as smog and chemical waste are released from vehicle workshops and industrial sectors.

Waste materials consist of glass, metals, paper, faeces, plastic, food waste, and toxic waste.

Based on the types of waste shown above, state other examples of waste materials.



Biodegradable and Non-biodegradable Waste

Jesy's father asked her to sort out the domestic waste based on the different types before throwing them into the bin. Let us follow their conversations.



Biodegradable Waste



Do you know what are biodegradable and non-biodegradable waste?

Biodegradable waste is materials that can be decomposed by microorganisms such as bacteria and fungi. When decomposition process occurs, nutrients will be absorbed back into the soil. Biodegradable waste consists of organic materials as shown in the pictures below.



food waste



paper and boxes



dry leaves



faeces

Non-biodegradable Waste

Non-biodegradable waste are materials that cannot be decomposed by microorganisms. They will continue to be around us for a long time and will cause pollution to the environment. Non-biodegradable waste consists of materials as shown in the pictures below.



plastic



metals



glass



toxic waste



FUN ACTIVITY

Biodegradable and Non-biodegradable Waste

Apparatus and materials: glue, cardboard, scissors, pictures of waste materials, Internet access, computer, printer



Steps:

1. Find and download pictures of waste materials using the Internet.
2. Print the downloaded pictures of the waste materials.
3. Observe each picture.
4. Identify the types of biodegradable and non-biodegradable waste materials.
5. Present the work of your group creatively.



Be careful when using scissors.

Questions:

1. What are the biodegradable and non-biodegradable waste that can be identified?
2. What do biodegradable and non-biodegradable waste mean?

Uses of Biodegradable and Non-biodegradable Materials

The latest development of technology has produced various products made of biodegradable and non-biodegradable materials. We need to use biodegradable and non-biodegradable materials wisely.

Why do we need to use biodegradable materials wisely?



Biodegradable Materials

Which type of plates do you want to buy?

Let's buy the one that will not pollute the environment.

How does the use of biodegradable materials help in reducing environmental pollution?

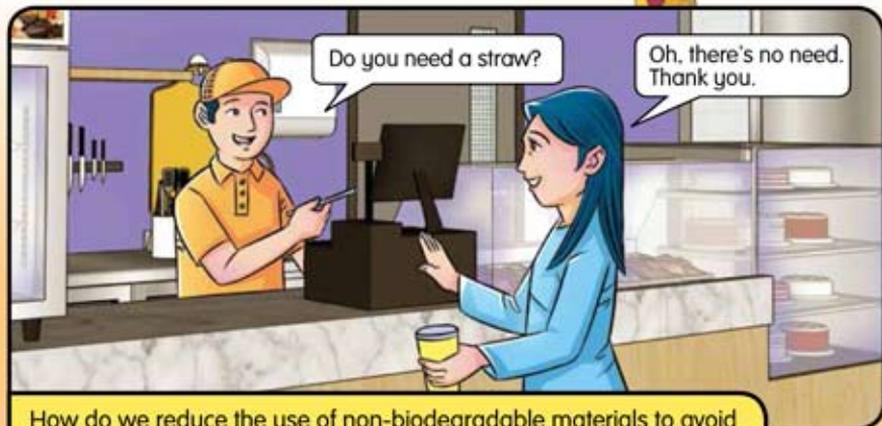
We must not throw leftover food into the river.

That's true. The leftover food will decompose and cause the oxygen content in the river to decrease.

How do biodegradable materials harm aquatic lives?

Non-biodegradable Materials

Why do we need to use non-biodegradable materials wisely?



How do we reduce the use of non-biodegradable materials to avoid environmental pollution?

Flash floods are happening more frequently in this city.



How do non-biodegradable materials contribute to flash floods?

National News

Pollution in Kim Kim River

PASIR GUDANG: The illegal dumping of chemical waste into the Kim Kim river by factories has caused serious pollution.

The pollution has caused the river water to change colour, produce bad odour, and also kill aquatic lives.

These chemical waste also released toxic fumes which caused more than 100 people living around the Kim Kim river to be hospitalised. The victims suffered from shortness of breath from inhaling the toxic gases.



How do non-biodegradable materials affect human health?



Based on your understanding, summarise the purpose of using biodegradable and non-biodegradable materials wisely.

SCIENCE INFO

Non-biodegradable materials such as plastic bottles can be recycled into new products such as clothing. The bottles are collected, cleaned, and later sorted according to their colours. Clear plastic bottles can be recycled into white threads. Green plastic bottles can be recycled into green threads.

The bottles are crushed into smaller pieces and processed into plastic fibres. The plastic fibres are spun into plastic yarns. The plastic yarns are woven into fabric. To make a shirt, only eight plastic bottles are needed.





FUN ACTIVITY

Classifying Waste Materials



Apparatus and materials: A4 paper, flip chart paper, coloured pencils

Steps:

1. Observe the waste materials that are thrown out from your house for one week.
2. Record your observations in the table.

Waste material	Type of material	Quantity of waste material	
		Biodegradable	Non-biodegradable
/	/	/	/
/	/	/	/
/	/	/	/
Total		/	/

3. Based on the data collected, discuss the results of the observations in your group.
4. Classify the waste materials into biodegradable and non-biodegradable.
5. Make a classification chart on the flip chart paper.
6. Plan ways to reduce each waste material wisely.
7. Present the result of your discussion to the class.

Questions:

1. What is the most discarded material within one week?
2. How do you classify the biodegradable and non-biodegradable waste?
3. How can you reduce each waste wisely?
4. Explain proper waste management. Give examples.

Proper Ways of Waste Management

A planned and proper waste management needs to be carried out to reduce the harmful effects to the environment. This also ensures a sustainable life for the future generations.



How can you help in managing waste properly?

I can wrap and tie the plastic bag containing the waste materials tightly.



Waste materials should be wrapped and tied up properly in plastic bags before disposal. This can help to prevent waste materials from being exposed to pests such as rats and flies that carry diseases.

I use the leftover food to make compost fertiliser.



Waste materials such as leftover food can be decomposed and made into compost fertiliser.



I'm using a special container to dispose oil waste.

Use special containers to dispose waste materials such as oil waste.

Waste materials must be sorted out according to their types to ease the disposal process.

I sort out the waste materials according to their types.



I will donate these items.

Waste materials that are in good condition can still be used and can be donated to those in need.

My father made this swing using a used tyre from a lorry.

I used old newspapers to make this kite.

Waste materials can be reused for different purposes.



RECYCLING CENTRE

We need to sort out the waste materials before sending them to the recycling centre.

Waste materials can be recycled into new products.

Repairing faulty equipment can save money.

We can save money by repairing any damage on our own.

Would you prefer a plastic bag?

Oh, there is no need. I'm using a reusable bag.

Reusable bags can be used to reduce waste such as plastic bags.



How does your neighbourhood conduct waste management? Suggest more sustainable ways to manage waste.



What are the types of waste that can be disposed into the recycling bins?

Waste materials can be sorted out using recycling bins as shown in the pictures.

The blue recycling bin is used to dispose waste materials that are made of paper. Examples of waste materials that can be disposed into this bin are as follows:



newspapers



magazines



books



cardboard boxes



The brown recycling bin is used to dispose waste materials that are made of glass. Examples of waste materials that can be disposed into this bin are as follows:



drinking bottles



food containers



cosmetic bottles



mirrors

The orange recycling bin is used to dispose waste materials that are made of aluminium, steel, and plastic. Examples of waste materials that can be disposed into this bin are as follows:



soft drink cans



plastic food containers



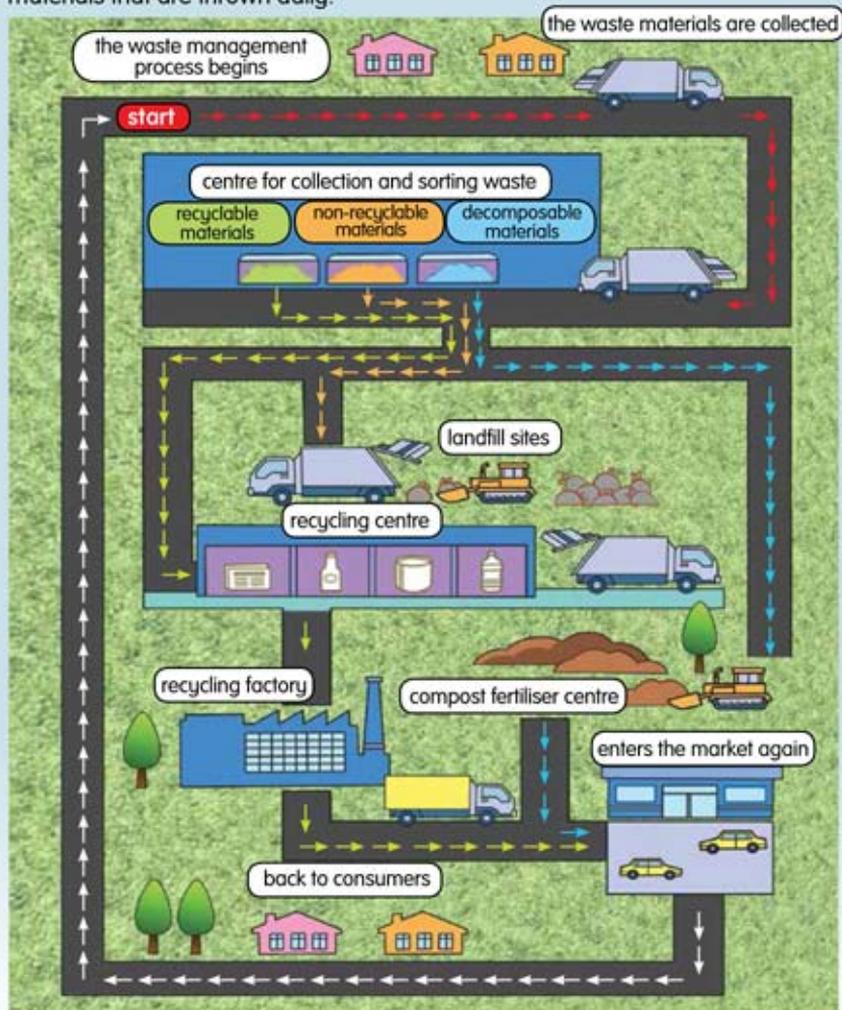
detergent bottles



food cans



Proper ways of waste management is also under the responsibility of the local municipal authority. Let us understand the process of managing waste materials that are thrown daily.



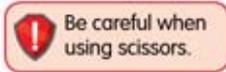
How do we manage waste materials properly to ensure a sustainable life?

**FUN ACTIVITY****5R Project (Reuse, Reduce, Recycle, Repair, Refuse)**

Apparatus and materials: camera, computer, printer, scissors, glue, pencils, paper, coloured pencils, manila cards

**Steps:**

- The table below shows the 5R Project that will be carried out by your class.



5R activity	Description
Reduce	reduce waste materials
Reuse	reuse waste materials
Recycle	recycle waste materials
Repair	repair materials that can become waste
Refuse	refuse materials that can cause waste

- The leader of each group chooses one 5R activity by voting. The chosen activity will be carried out by the group.
- Plan each task to be carried out during the activity. For example, the group members can carry out a recycling activity by collecting waste materials near their school and neighbourhood to be recycled. Examples of waste materials that can be collected include aluminium cans, paper, and plastic bottles.
- Carry out the 5R activities for one week.
- Take pictures while carrying out the activity.
- Print and paste the pictures on a manila card.
- Present the results of the activity creatively.

Questions:

- Give a suggestion to improve the awareness of 5R practices among your friends.
- State the effects of improper waste management to the environment.



Make compost fertiliser using water, soil, and biodegradable waste such as leftover vegetables, egg shells, banana peels, newspapers, and dry leaves. Prepare a special container to place the compost fertiliser.

Steps:

1.



Make a hole at the bottom of a flowerpot.

2.



Cut the biodegradable waste into small pieces.

3.



Put in the soil as the first layer.

4.



Put in the biodegradable waste as the second layer.

5.



Put the soil and biodegradable waste alternately until all the materials are used up.

6.



Spray some water onto the mixture every day.

7.



Make sure the container is covered after the water is sprayed.

8. Leave the mixture in the container. Stir it once a week until all the materials are decomposed into compost fertiliser.



compost fertiliser



MIND REFLECTION

1. Waste materials are materials that we no longer need and want to keep.
2. The seven types of waste materials are as follows:
 - glass • metal • paper • faeces
 - plastic • food waste • toxic waste
3. Biodegradable waste is materials that can be decomposed by microorganisms.
4. Non-biodegradable waste is materials that cannot be decomposed by microorganisms.
5. Examples of biodegradable waste are food waste, paper, boxes, dry leaves, and faeces.
6. Examples of non-biodegradable waste are plastic, metals, glass, and toxic waste.
7. Some of the effects of biodegradable and non-biodegradable materials if they are not used wisely are as follows:
 - Environmental pollution such as water pollution and air pollution will occur.
 - Aquatic lives die due to lack of oxygen.
 - Aquatic lives die from eating plastic that are thrown into the oceans.
 - Drains become clogged and cause flash floods.
 - Human lives become threatened by the disposal of toxic waste.
8. Some proper ways of waste management to ensure a sustainable life are as follows:
 - Waste materials should be wrapped and tied up properly in plastic bags before disposal.
 - Waste materials such as leftover food can be decomposed and made into compost fertiliser.
 - Use special containers to dispose waste materials such as oil waste.
 - Waste materials must be sorted out according to their types to ease the disposal process.
 - Waste materials that are in good condition can still be used and can be donated to those in need.
 - Waste materials can be reused for different purposes.
 - Waste materials can be recycled into new products.
 - Repairing faulty equipment can save money.
 - Reusable bags can be used to reduce waste such as plastic bags.



MIND TEST

Answer all questions in the Science exercise book.

1. Complete the following table by writing the examples of waste materials.

Type of waste	plastic	paper	glass	metal
Example of waste material				

2. What is the meaning of:
(a) biodegradable waste?
(b) non-biodegradable waste?
3. The picture below shows a pile of waste by the roadside.



- (a) State the types of waste materials that can be seen in the waste pile.
(b) Classify the waste materials above into biodegradable and non-biodegradable.
(c) What are the effects of these waste to the environment?
(d) Suggest ways to improve the practice of disposing these waste materials.