

SUSTAINABLE SCHOOLS – CONSUMPTION AND WASTE

A project based scheme of work for KS2

Contents A Curriculum Plan - Based on consumption and waste issues
 What Happens to our Rubbish? - A recycling and waste booklet
 Pupil Resources - Information and work sheets
 Teachers KS2 medium term planning
 Teachers Information Sheets

NUMERACY:	SCIENCE:	LITERACY:	
<p>Data Handling using individual school or borough data on waste collected, paper collected, textiles collected. -Create graphs: year group could focus for one week on collecting textiles and recording their findings; classes could record the amount of recyclables which are collected and use tally or bar charts.</p> <p>Use school related software to create graphs and charts for a class/school display.</p> <p>If available record the data provided by energy monitors.</p>	<p>Habitats: How does litter affect our environment? What impact does landfill/incinerator sites have upon a habitat? Explore habitat in the local environment.</p>	<p>Use internet sites to investigate issues and dilemmas related to recycling, renewable energy, Fair Trade or Third world debt. Debate: Why recycle? How should waste be disposed of? Via landfill or incinerator? Play character roles of people in the community - how would they be affected by a landfill locally? or incinerator? S & L Hot Seating and Conscience Alley activities for the roles. News Report/Article: (use Microsoft Publisher) recycling initiatives being promoted locally; report on waste disposal figures and tips on how to reduce waste; interview local "Eco-warrior". Letter writing: Campaign MP for improving recycling facilities; Leaflet: How to practise 3R's, Reasons to recycle; What to recycle and where. Poetry: Write a rap/limerick/haiku etc about recycling (See Cycler site) Recount: Using Waste disposal website write an account of what happens from doorstep to landfill.</p>	
	GEOGRAPHY:		
	<p>Land use around the world, carbon footprint work, recycling initiatives in U.K, Europe and elsewhere globally; Quality of life/poverty, Fair Trade, Climate Change.</p>		SUSTAINABLE SCHOOLS - CONSUMPTION AND WASTE PROJECT FOR KEY STAGE 2
DT:		ART:	
<p>Uses boxes and other recyclable resources in all areas of making; Design own alternative recycling waste bins to encourage recycling, Design tools which will aid people ie can crushers.</p>	<p>Branching database to sort recyclable products; wildlife identified in habitat work; data software used for Numeracy work, Powerpoint to present findings on why to recycle, how to practise 3R's; Use Publisher to produce newspaper articles or reports on issues covered, produce a newsletter for parents or local community.</p>	<p>Design and create posters using a wide range of materials which could otherwise be recycled.</p>	

Thanks to the following who helped to develop this pack:
 Debbie Westbury-Wells – Bleakhouse Primary School, Recycling and Waste Management Team,
 CRV Community Recycling Venture.

This pack has been funded by Sandwell Council Highways and Environment.



 **recycle for Sandwell**

RECYCLING AND WASTE

What happens to our rubbish?

This booklet has been developed with contributions from Recycling and Waste Management Team.
Funded by Sandwell Council Highways and Environment



- 1 What happens to our rubbish?
- 2 What is recycling?
- 3 Why recycle?
- 4 What can we do to protect the earth's resources?
- 5 How to recycle?

1

What happens to our rubbish?

In Sandwell the council collects thousands of tonnes of rubbish each year. This comes from the weekly refuse collections and the Household Waste and Recycling centre and recycling collections.

It could go to landfill... **The landfill process**

A landfill site is an enormous hole in the ground that is filled with our rubbish and then covered up. These are sometimes old quarries or gravel pits (made by digging out the materials used in construction and other industries). In the Victorian times, landfill sites were mostly filled in with ash (hence the term dust cart) as at that time any waste was simply put on the kitchen fire to provide heat.

When landfills were originally planned they were placed on the least expensive land in convenient locations. We now know that as the waste decomposes (rots) it can release unpleasant liquids (example leachate) and gas (example methane).

Today landfill sites are much better managed, they have strict guidelines and are designed to protect the environment from pollution. Not only this but they have the potential to use the waste gases to generate useful energy. At the end of their useful life the landfill sites are restored (they are covered with clay, sand, gravel, topsoil and vegetation) to form areas for recreation or other uses you would never know they had been there!

However we are running out of space for our rubbish. We need to consider alternatives. It is estimated that by 2015 there will be no space left in the landfills in the West Midlands!



It could be recycled...



2

What is recycling?

Recycling is a process by which used materials are collected and sorted for reprocessing and are used in the production of new goods. Over the last 10 years, Sandwell MBC has set up regular collections of recyclables from homes to reduce the rubbish we send to landfill. In 2006 over 80% of homes in the borough had a recycling collection.

The recycling rate for Sandwell has increased significantly in recent years is currently around **14.09% = 17246.09 tonnes**. In addition composting from household waste is **6.30% = 7714.04 tonnes**. **In 2006/7 the total % recycled = 20.39% which equates to 24,960.13 tonnes.**

The increase in recycling has impacted on waste collection figures

Waste Collection Figures

2004/5 **137,000 tonnes**

2005/6 **134,000 tonnes**

2006/7 **122,000 tonnes**

Can you see a trend?

An addition to recycling you can also reduce, reuse.

 **reduce**  **reuse**  **recycle**

Reduce the amount of waste you produce by only buying what you need.

Try reusing items such as carrier bags or using plastic pots as plant pots.

Why recycle?

Reducing the amount of rubbish going to landfill is one good reason to recycle our waste, but that isn't the only reason!

Goods are made, brought, used then thrown away. The problem is that the things we throw away are made from the earth's natural resources; once we use the resources up there will be nothing left!

Did You Know?

Fossil fuels such as oil, coal and gas will disappear in the next **80 years** if we do not use them with greater care.

Recycling reduces the amount of energy (fossil fuels), water and natural resources needed to produce new goods. It also helps to reduce pollution.

Each year across the UK our waste increases by 3% at this rate we will double the amount of waste we produce every 25 years!

The UK produces approx 400 million tonnes of waste each year, 73% of this goes to landfill, even though 90% of this is recoverable - it could be recycled, composted or used to generate energy.

Recycling aluminium drink cans saves up to 95% of the energy needed to make aluminium from its raw materials.

ACTIVITY

1

Find out how recycling helps reduce climate change.

We can turn much of our waste materials into new goods!

For example...

Glass - Crushed and melted down in massive furnaces and remade to make new bottles and jars using much less energy.

Paper and Cardboard - Can be made into new newspapers and boxes.

Metal - Drink and food cans will be made into new cans, cars, fridges, washing machines or building construction materials.

Textiles - Can be resold or used as padding for pet beds.

Plastic - 25 plastic bottles can be recycled to make a fleece jacket. Some plastics are also sorted and recycled and made into things like fence posts, compost bins and garden furniture.



We are using up the Earth's resources water, oil, gas, minerals, plants, wood, coal. **Fill in the missing words to complete the statements...**

Paper is produced from

. make metals, such as aluminium and steel.

. . . . can be made into plastics.

. can be collected in water butts.

. can be collected to produce compost.

Lower a thermostat to save



Design a poster to illustrate the facts about consumption and waste and encourage people to reduce their waste!

What can we do to protect the earth's resources?



ACTIVITY

4

Write down your ideas...

Reduce the amount of the Earth's resources that we use...

Reuse don't just bin it, could someone else make use of it?

Recycle can the materials be made into something new?

How to recycle

There are many items that can be recycled using your doorstep collection or at your local recycling centre. See below for examples...

You can put these recyclables in this box



paper (newspapers magazines & junk mail)

cans (food, drink or empty aerosol cans)

glass bottles or jars

The following items can be taken to your local recycling centre

<http://www.recycle-more.co.uk/banklocator/banklocator.aspx>

paper

cans

glass bottles or jars

shoes (pairs only)

textiles (clothes, blankets, sheets and curtains)



Garden Waste can be recycled using the Garden Waste wheeled bin collection!

garden waste wheeled bin



Contact Sandwell

Further information about recycling and waste minimisation can be found by contacting Contact Sandwell or viewing the Recycle for Sandwell web pages - www.recycling.sandwell.gov.uk

KS2 MEDIUM TERM PLANNING

SUSTAINABLE SCHOOLS - CONSUMPTION AND WASTE - THE EARTH'S RESOURCES - UNIT 1

Learning Objectives	KEY QUESTIONS	Learning Outcome	Links
<p>To understand what the world's resources are and the limits they have.</p> <p>To develop understanding on how Earth's resources can be used more sustainably.</p>	<ul style="list-style-type: none"> • Which are considered sustainable and why? • How as an individual/school we can conserve resources? • How can we audit and monitor waste and water usage within school (at home)? • What is renewable energy? 	<p>By the end of the unit children should:</p> <ul style="list-style-type: none"> • Be able to recognize ways to reduce waste; • Know ways in which to save water; • Recognise the Earth's resources need to be used sustainably 	<p>Every Child Matters: Make a positive contribution... decision-making in community and the environment.</p> <p>Sustainable Schools: Consumption and Waste: limits to the world's resources – responsibility to conserve the planet. Global citizenship: global context for trade and consumption – good quality of life for all – understanding personal values, beliefs and behaviour</p>
<p>SUGGESTED TEACHING ACTIVITIES:</p> <ul style="list-style-type: none"> • Investigate types of energy production. • Waste minimization – How can we reduce the amount of rubbish we produce? • Investigate how much waste is produced weekly/termly/annually. Compare to SMBC 	<ul style="list-style-type: none"> • What could be recycled and how? Share images to show children on products that can be recycled. Use 'Household Waste and Recycling Centre' leaflet • Investigate water uses and ways to reduce usage. Design posters to encourage people to: take a shower rather than a bath; only fill the kettle with what's required; fit a hippo bag, collect rainwater or grey water for watering plants etc. Link to ST Water or supplier. 	<ul style="list-style-type: none"> • What is sustainability? • Look at sustainability issues, how can we be more sustainable? What are the differences between sustainable and finite resources? • Link to QCA teachernet sustainable development, 	<p>National Curriculum Links:</p> <p>NUMERACY: Handling Data, collecting data and presenting data in tally charts, bar charts or pie charts.</p> <p>LITERACY/ART: Persuasive poster or leaflet to encourage people to save water.</p> <p>GEOGRAPHY: Identifying sustainability issues.</p> <p>HOMEWORK: Measure the water used at home over the course of a few days to compare with data from school.</p> <p>Information Communication Technology: www.panda.org/climate - WWF - climate change, sustainability, problems and solutions, What you can do, news and resources; www.puretrust.org.uk/ - clean planet trust – calculate annual carbon use, energy saving tips and climate change; www.recyclezone.org.uk – site for schools, children and teachers about the world of waste; www.recyclenow.com – recycle locator in Sandwell</p>

SUSTAINABLE SCHOOLS - CONSUMPTION AND WASTE - THE EARTH'S RESOURCES - UNIT 2

Learning Objectives	KEY QUESTIONS	Learning Outcome	Links
<p>To develop knowledge what waste is and the process it goes through. To develop an understanding of the limits of current waste disposal methods and investigate possible solutions.</p> <p>To consider their own role in reducing waste and how this will impact in future.</p>	<ul style="list-style-type: none"> • What is waste? • Where does waste go? • What is a landfill site? • What are the problems of landfill? • What else can we do with our waste? • What is recycling? • Why should we recycle? • Where can we recycle? • What can we recycle? 	<p>By the end of the unit children should:</p> <ul style="list-style-type: none"> • Understand the waste process; • Have a knowledge about why waste needs to be reduced; • Be aware of the role they can play in reducing waste at school and at home. 	<p>Sustainable Schools: Consumption and Waste: limits to the world's resources – responsibility to conserve the planet. Rights, responsibilities and behaviour: consider how their actions have implications for life in the future</p> <p>Every Child Matters: Make a positive contribution... decision-making in community and the environment.</p>
<p>SUGGESTED TEACHING ACTIVITIES:</p> <ul style="list-style-type: none"> • What is recycling and what does it mean? • What can be recycled? • Reduce, reuse, recycle and repair. Using items normally thrown away show the children how we can reduce waste by following the 3R's. • Write a rap about recycling. • Invite Cycler the Rapping robot. 	<ul style="list-style-type: none"> • Explain/discuss why we need to reduce the amount of rubbish we produce. • Using website show the process of waste being collected from the door to landfill site – children write a recount of what happens to their waste from door to landfill. • Debate the impact of landfill site or incinerator being built locally, play different character roles, those for/against, Hot seat characters opinions; conscience alley activity. 	<ul style="list-style-type: none"> • Investigate the different methods of a more sustainable waste disposal system, and understand the limits and advantages. • Composting- introduce a wormery or compost collection in school to collect fruit waste from pupils, staff and kitchen if on-site. • Watch 'Slash the Trash' DVD. • Create a branching database to help people sort out which products can be recycled. 	<p>National Curriculum Links:</p> <p>NUMERACY: Handling Data: measuring amounts of waste before reduction and after. D&T: Design own waste disposal system, design and make tools to aid people to recycle. LITERACY: Write a letter to council or MP about waste minimization, Leaflet to persuade people to follow 3R's. Debate work. Rap.</p> <p>CRV LINK: weight and bags collected available for textiles and paper</p> <p>Information Communication Technology:</p> <p>www.recyclezone.org.uk – site for schools, children and teachers about the world of waste; www.recyclenow.com – recycle locator in Sandwell; www.panda.org/climate - WWF - climate change, sustainability, problems and solutions, What you can do, news and resources; www.puretrust.org.uk/ - clean planet trust – calculate annual carbon use, energy saving tips and climate change.</p>

SUSTAINABLE SCHOOLS - CLIMATE CHANGE AND HUMAN IMPACT - THE EARTH'S RESOURCES - UNIT 3

Learning Objectives	KEY QUESTIONS	Learning Outcome	Links
<p>To understand the impact humans have upon the environment. To appreciate how their own way of life can effect the environment and communities around the world.</p>	<ul style="list-style-type: none"> • What impact are humans having upon the environment? • How is pollution created? • What are the local environmental effects of pollution? • What is global warming and its effects? (Sea levels, weather, drought, flooding etc.) 	<p>By the end of the unit children should:</p> <ul style="list-style-type: none"> • Realise they have a right and responsibility to live in a more sustainable way, be that at home, at school or in the wider community. • Develop an awareness of the impact humans are having upon the Earth's resources, both locally and globally. 	<p>Every Child Matters: Make a positive contribution... decision-making in community and the environment.</p> <p>Sustainable Schools: Consumption and Waste: limits to the world's resources – responsibility to conserve the planet. Climate change and energy: unsustainable growth could cause pollution – consider how home, school and the wider world can be managed more sustainably. Global citizenship: global context for trade and consumption.</p>
<p>SUGGESTED TEACHING ACTIVITIES:</p> <ul style="list-style-type: none"> • Global Warming – link to Chembakolli and India etc and how these countries are affected by climate change (link to water use). 	<ul style="list-style-type: none"> • Show images of different landscapes and ask: • What happens if the climate is hotter/colder/wetter/drier? • Link to climate change website and investigate temperatures, rainfall locally and globally. 	<ul style="list-style-type: none"> • Investigate the effects of global warming: • Sea levels rising; • Effects of drought; • Changes in weather patterns. 	<p>National Curriculum Links:</p> <p>NUMERACY: Handling data/comparing data locally and globally, temperatures; reading thermometers, measuring rainfall.</p> <p>GEOGRAPHY: land use and climate change affect.</p> <p>Information Communication Technology:</p> <p>www.panda.org/climate - WWF - climate change, sustainability, problems and solutions, What you can do, news and resources;</p> <p>www.puretrust.org.uk/ - clean planet trust – calculate annual carbon use, energy saving tips and climate change.</p>

SUSTAINABLE SCHOOLS - GLOBAL CITIZENSHIP - THE EARTH'S RESOURCES- UNIT 4

Learning Objectives	KEY QUESTIONS	Learning Outcome	Links
<p>To develop understanding of living conditions globally.</p> <p>To develop understanding of Fair Trade products and the positive affect on people's quality of life.</p>	<ul style="list-style-type: none"> • How do people live in ...? • How is their life similar/different to my own? • What is a third world country? • How do people live in ... (3rd world)? • How is their life similar/different to my own? • What is fair trade? • Who benefits from fair trade? • Why buy fair trade instead? • What products are available as Fair Trade? 	<p>By the end of the unit children should:</p> <ul style="list-style-type: none"> • Have an understanding that quality of life differs depending upon where you live; • Know what Fair Trade is; • Understand the reasons to support Fair Trade products. 	<p>Every Child Matters: Make a positive contribution... support the community and environment.</p> <p>Sustainable Schools: Global citizenship: global context for trade and consumption.</p>
<p>SUGGESTED TEACHING ACTIVITIES:</p> <ul style="list-style-type: none"> • Decide upon what quality of life is defined as. • Investigate different cities around the world. Compare to their own life. 	<ul style="list-style-type: none"> • Discuss/explain what the children understand by Third world country. Link to Oxfam site. • Discuss what the children think about what their life might be like in a third world country. • Show a range of Fair Trade products available (display via IWB) and ask children how they are different to similar products. 	<ul style="list-style-type: none"> • Identify Fair Trade label. Look at label to understand fair trade. Explain further if required. • Use Fair Trade website to share stories. Children design fair trade poster for products explaining benefits. 	<p>National Curriculum Links: GEOGRAPHY: Quality of life provided by Fair Trade.</p> <p>www.fairtrade.co.uk – fair-trade site.</p>

SUSTAINABLE SCHOOLS - WILDLIFE AND NATURE - THE EARTH'S RESOURCES - UNIT 5

Learning Objectives	KEY QUESTIONS	Learning Outcome	Links
<p>To understand the connection between living things and their environment</p> <p>To understand and develop their knowledge of habitats.</p>	<ul style="list-style-type: none"> • What is a habitat? • What habitats are in our local environment/school grounds? • What would happen if an eco system was lost? • What causes habitats to disappear? • What benefits does an eco system have? • What is our role in the eco system? 	<p>By the end of the unit children should:</p> <ul style="list-style-type: none"> • Understand what a habitat is; • Be able to identify habitats in their local environment; • Develop their knowledge about the cause and effect of losing a habitat. 	<p>Every Child Matters: Make a positive contribution... develop socially and emotionally.</p> <p>Sustainable Schools: Climate change and energy: unsustainable growth could cause pollution – consider how home, school and the wider world can be managed more sustainably. Wildlife and nature: living things depend on each other and that all living things have value.</p>
<p>SUGGESTED TEACHING ACTIVITIES:</p>	<ul style="list-style-type: none"> • Investigate what would happen if the habitat was destroyed; discuss what would happen to other wildlife. • Investigate the school grounds and identify habitats within, list the wildlife found. 	<ul style="list-style-type: none"> • Create a branching database to identify the wildlife discovered; create a key to represent the habitats found to display in class. 	<p>National Curriculum Links: ICT/NUMERACY: Branching databases; SCIENCE: Habitats</p>

SUSTAINABLE SCHOOLS - LOCAL FOCUS, RIGHTS, RESPONSIBILITIES AND BEHAVIOUR - THE EARTH'S RESOURCES - UNIT 6

Learning Objectives	KEY QUESTIONS	Learning Outcome	Links
<p>To develop understanding of the unique features and opportunities available within their own community.</p> <p>To understand the reasons for purchasing products locally and using local services.</p>	<ul style="list-style-type: none"> • What features does our environment have? • What opportunities are available to children in our community? • Who is our community? • What responsibilities do we have in our community? • As a school community what is our carbon footprint? • As an individual what is our carbon footprint? • How can we reduce our footprint as a community at school or at home/ 	<p>By the end of the unit children should:</p> <ul style="list-style-type: none"> • Recognise unique features in their environment; • Understand the term community and ones they are linked to. • Develop understanding of carbon footprint; • Develop awareness of how to reduce own footprint. 	<p>Every Child Matters: Make a positive contribution... decision-making in community and the environment. Stay safe: safe from bullying and discrimination, crime and antisocial behaviour.</p> <p>Sustainable Schools: Global citizenship: global context for trade and consumption. Local focus: value the locality – establish belonging – awareness of the distinctive features of their area and community. Inclusion and participation: participate in decision making, school and wider community – improve everyone’s lives. Rights, responsibilities and behaviour: consider how their actions have implications for life in the future.</p>
<p>SUGGESTED TEACHING ACTIVITIES:</p> <ul style="list-style-type: none"> • Investigate clubs, services available, etc in local community. • Link to Carbon footprint website and investigate what a carbon footprint is. 	<ul style="list-style-type: none"> • Investigate areas of individual footprint or school footprint calculating or estimating amounts and look at ways to reduce footprint. Which ones are practical? Which have immediate impact? Which ones are more difficult and why? 	<ul style="list-style-type: none"> • Design posters on how to reduce carbon footprint. • Interview resource manager to find out where school purchases are made – lobby school council/eco-committee to make changes if required to buy recycled and local product. 	<p>National Curriculum Links: NUMERACY: Calculating carbon footprint; using a calculator; handling data; LITERACY: Interview Information Communication Technology: www.panda.org/climate - WWF - climate change, sustainability, problems and solutions, What you can do, news and resources; www.puretrust.org.uk/ - clean planet trust – calculate annual carbon use, energy saving tips and climate change.</p>

Useful Websites

www.recycle-more.org
<http://www.theclc.net/sustainability/waste/>
www.phtolibrary.recyclenowpartners.org.uk
www.tidybritain.org.uk
www.whatcanyoudo.co.uk
www.stopclimatechaos.org/66.asp
www.wikipedia.org/wiki/carbon_footprint
www.panda.org/climate
www.planetark.org
www.puretrust.org.uk
www.est.org.uk/sense/propertyDetailsPublic.do?action+htm
www.olliercycles.com

www.direct.gov.uk/en/Environmentandgreenerliving/index.htm
www.environment-agency.gov.uk
www.dft.gov.uk/ActonCO2/
www.transport2000.org.uk

www.news.bbc.co.uk
www.news.bbc.co.uk/cbbcnews/hi/nesid_4270000/newsid_4270700/4270719.stm
www.newscientist.com

www.foe.org.uk
www.friendsoftheearth.org.uk
www.wwf.org.uk
www.nationaltrust.org.uk
www.fartrade.co.uk

www.earth.google.com
www.connexions-direct.org.uk
www.gcareers.com
www.sandwell.gov.uk
www.sustainable-schools-award.com

Useful Contacts

Sandwell Recycling and Waste Management Team
Andrea Morris - Promotions Manager - 0121 569 6884

Education and Business Partnership (EBP)
Luke Stevens 0121 569 2346

Recycling and Energy Centres (Sandwell)

<http://www.laws.sandwell.gov.uk/com/navigation/environmental/rubbish-waste-and-recycling/recycling/recycling/-centres>

<http://www.recycle-more.co.uk/banklocator/banlocator.aspx>

Tipton Litter Watch
<http://www.tiptonlitterwatch.co.uk/>
Lindsay Richmond 0121 557 6001

WRAP <http://www.recyclenow.com/compost/>
Anne Nagle 07985 994562

Sandwell Direct Customer Services
0845 358 2200
Sandwell Environmental Education Officer
Marion Mills - 0121 569 4019

Waste

pupil information sheet

1

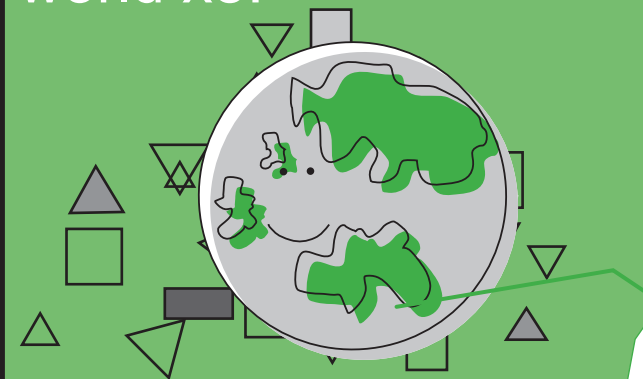
rubbish!



Our throw-away culture is risking people's health and squandering the world's natural resources.

How many worlds do we need?

world x8!



If everyone in the world was as wasteful as we are in the UK we would need **8 worlds** to keep going.

Landfill

Dumping rubbish in the ground or in waste mountains:

- Releases toxins
Rotting rubbish emits explosive gases and polluting liquids. Methane emissions contribute to climate change.
- Threatens our quality of life
Landfill creates problems for local communities. Nuisances include more traffic, noise, odours, smoke, dust, litter and pests.

x8

please look after this world!!!



recycle

pupil information sheet

2

Reduce, re-use, recycle

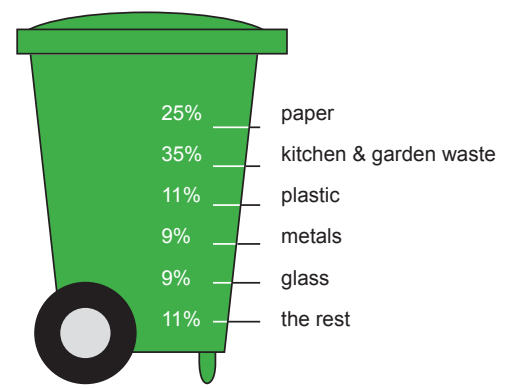
We are a nation addicted to throwing stuff out. In fact much of what we call waste could be disposed of differently, to be used again by someone else!

Why throw it in the bin?

Much of the waste that ends up in incinerators and landfill could be used again!

Rubbish in - Rubbish out

At the heart of the problem is a relentless cycle of...



- **Over production**

To meet the demand for goods, we make lots of new stuff. However, making new things uses up the world's valuable natural resources. Materials like oil and metal cannot be replaced; paper and wood production in some areas can damage rainforests and degrade wildlife sites.

- **Bad practice**

Producing goods from raw materials uses energy. If the energy source is a fossil fuel (coal, oil or gas) the carbon dioxide they release will contribute to climate change. Goods we buy aren't made to last so they need replacing prematurely. Factories and landfill can cause pollution. Good practice is not always considered.

- **Excessive disposal**

The average person in the uk throws out their body weight in rubbish every 3 months. Most of this could be reprocessed but instead it is sent to incinerators or landfill.

go to:

www.theck.net/sustainability/waste/buildings/recycling.htm to see how building waste is processed for recycling.

reduce, reuse, recycle

pupil activity sheet

1

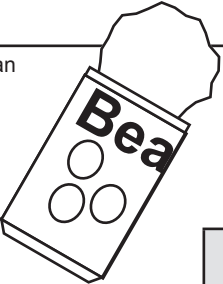
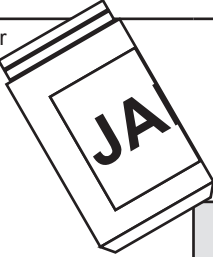
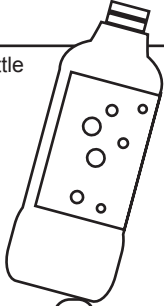
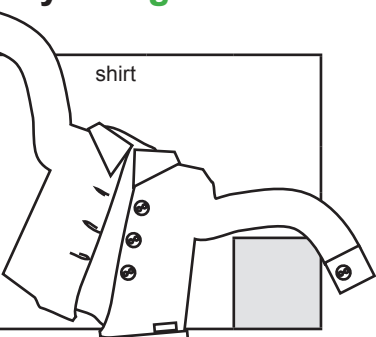
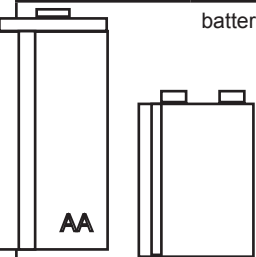
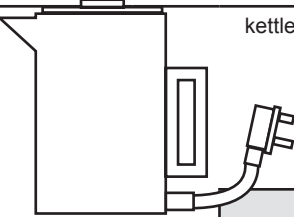
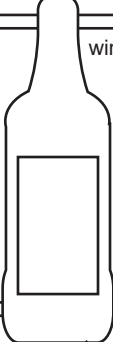
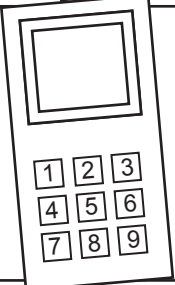
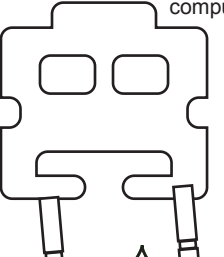
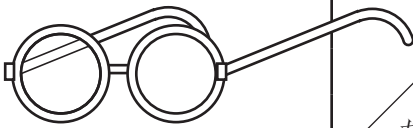
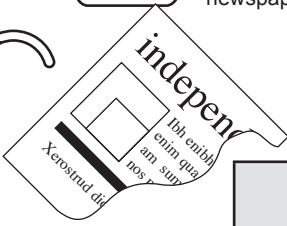
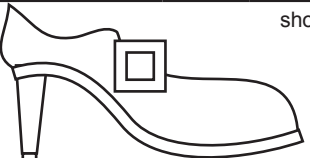
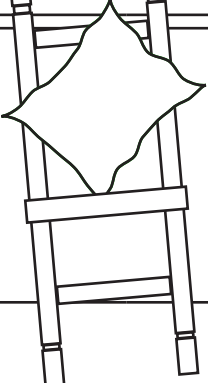
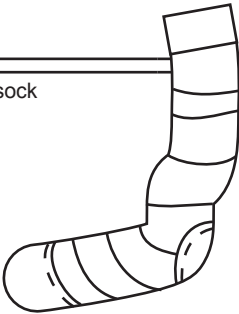
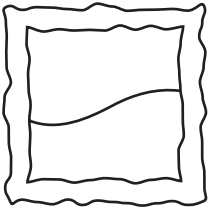
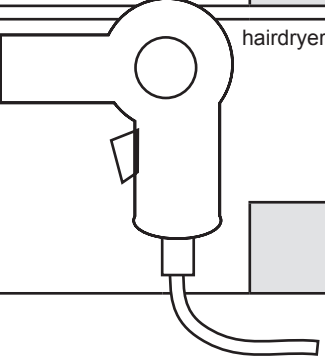
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date: _____

Here are some items from a rubbish bin. Help to sort out the rubbish so it doesn't go to landfill.

Look at the items below, which ones can you **reduce, reuse, recycle?**

Tick products which can be **reduced-red ✓**, **reused-blue ✓**, **recycled-green ✓**

<p>tin can</p> 	<p>jam jar</p> 	<p>pop bottle</p> 	<p>shirt</p> 
<p>battery</p> 	<p>kettle</p> 	<p>wine bottle</p> 	<p>mobile</p> 
<p>computer game</p> 	<p>glasses</p> 	<p>newspaper</p> 	<p>shoe</p> 
<p>chair</p> 	<p>sock</p> 	<p>tea bag</p> 	<p>hairdryer</p> 

reduce, reuse, recycle

pupil activity sheet

2

name:		date:	
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What have we recycled?

This week you are going to monitor how much you collect for recycling in school. Use the table below to record your data. You could recycle paper, glass or cans.

Collected	Monday	Tuesday	Wednesday	Thursday	Friday	Total
paper						
cans						
textiles						

This week we have saved items going to landfill.

waste audit

pupil activity sheet

3

name:		date:	
-------	--	-------	--

What do you throw away?

Today you are going to monitor how much waste is thrown away in your classroom (school). Using a bin bag and wearing gloves sort out the rubbish collected into different groups.

List the items that are recyclable and those which are non recyclable.

RECYCLABLE	NON RECYCLABLE

Now enter the type of **recyclable** waste into the tally chart below to discover which is the highest.

Type of Rubbish

RUBBISH TYPE	PAPER	CARD	PLASTICS	FRUIT WASTE	FOIL	OTHER
yogurt pots			3			


waste disposal data

pupil activity sheet

4

name:		date:	
-------	--	-------	--

fact!



1540
Tonnes

Sandwell Schools (118) total waste collected 05/06 was 1540 tonnes.

- Use the fact data opposite work out how much waste each Sandwell school produces individually, and then you could work this out for your own school, and per class.

SANDWELL BOROUGH FACTS	TOTAL
Recycled	14.11 %
Composted	6.31 %
Energy	12.86 %
Landfill	66.72 %

- Produce a pie or bar chart using the computer to display the above data.
- Write down as many ways that you have found to reduce the amount of waste going to landfill.

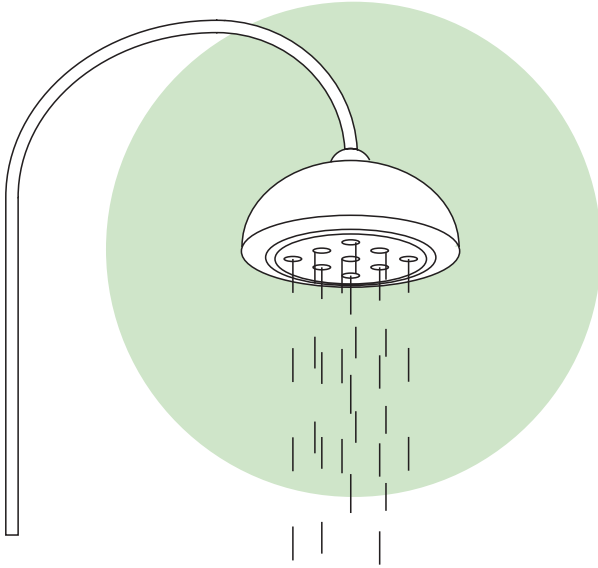
save water

pupil activity sheet

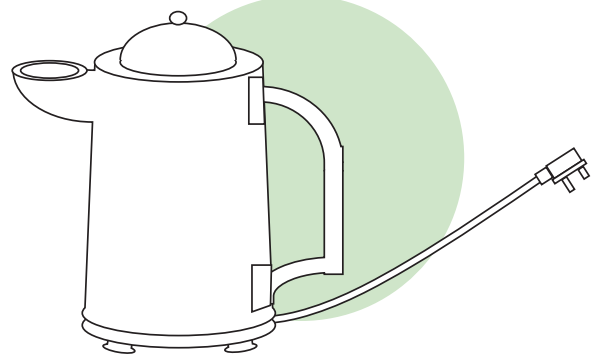
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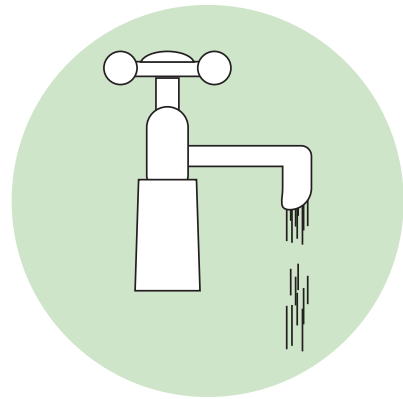
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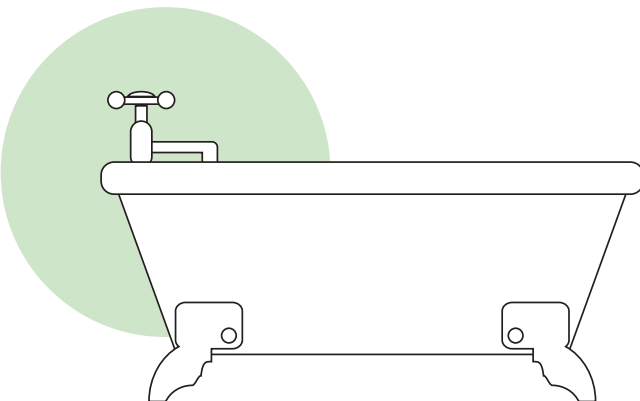
Take a short shower rather than a bath could save you up to 400 litres a week. If you do have baths, just half fill them.



Only boil as much water as you need.



Fix dripping taps . A dripping tap could waste as much as 90 litres a week. Brushing your teeth with the tap running wastes almost 9 litres a minute. Rinse out from a tumbler instead.



Put a displacement device like a “Hippo” in your toilet cistern https://www.south-staffs-water.co.uk/households/water_saving_devices.asp#order
<http://www.stwater.co.uk/server.php?show=ConForm.52>

habitats

pupil activity sheet

7

name: _____

date: _____

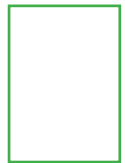
- ① Here is a postcard from a creature in your school grounds, can you work out who it's from?

Dear Pupil,

I am a social insect that lives in a nest community that may be located underground, in a ground-level mound, or in a tree. A queen or queens head my community; lay thousands of eggs to ensure the survival of the colony. Workers forage for food, care for the queen's offspring, work on the nest and protect the community. We typically eat nectar, seeds fungus or insects. We are omnivores.

Did you know?

I can lift and carry more than 3x my own body weight!



.....
1 The Mound
On The Hill
Field Lane
F42 8CR

Who Am I?

- ② Investigate your school grounds, what habitats are there? Choose one creature that you find.
- ③ Write a postcard to the creature you have chosen to explain where **you** live, what the living conditions are like, what food you eat and who may threaten your family and you!

habitats

pupil activity sheet

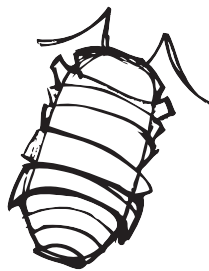
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<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>	<div data-bbox="1347 483 1458 640" style="border: 1px solid green; width: 70px; height: 70px; margin-bottom: 10px;"></div> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
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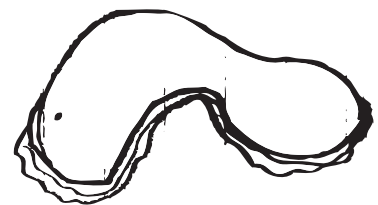
Some common urban creatures you might see...



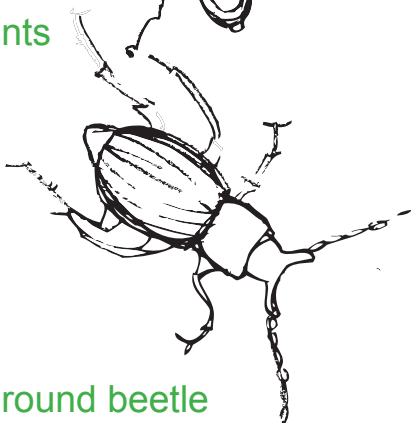
ants



woodlouse



slug



ground beetle



millipede

garden spider

Consumption and Waste

What is Waste?

What is your definition of waste? Superfluous. No longer serving a purpose. Not wanted.

Waste can consist of a range of things; unwanted teddy bear, out grown clothes and furniture, leftover food from the dinner table, garden waste, waste building materials, old tyres or paint left over from the last decorating job etc.

Household Waste Information

Household bin waste is collected from homes every week, thrown into the back of the refuse vehicles and crushed down, most of this will be taken directly to a landfill site.

However, more than three quarters of the rubbish in household bins could be recycled!

Many households do recycle some waste, using the regular collection service taking cans, paper and magazines, glass and textiles. The special kerbside collection vehicles have separate boxes for different types of materials so that they can be easily separated in preparation for recycling. Recycling reduces the amount being dumped into landfill sites and can save a lot of energy as the saved materials are made into new goods. Recycling protects our environment.

Household waste category

Household waste
Street bins & sweepings
Household waste recycling centre (disposal)
Kerbside recyclables
Recycling Centre recyclables (bottle bank recyclables)
Recycling at Household waste recycling centre

Household waste in Sandwell amounts to an average of 427.46kg per person per year for 06/07.

In Sandwell this is a total of 122,156.68 tonnes of waste in 2006/07, of which 24,960.13 tonnes was recycled and composted! The recycling rate for 06/07 is 20.39%

Small quantities of waste have also been combusted for energy at the 'MES Dudley' and 'Coventry Energy from Waste' facilities. This amounted to 15,681.69 tonnes in 2006/07.

DIFFERENT METHODS OF WASTE DISPOSAL

1. LANDFILL

Landfill is the disposal of rubbish by burying it in a very large hole. The 'holes' or landfill sites were usually old quarries or gravel pits created by extraction industries.

As the waste decomposes in the landfill site it can release chemicals, some of which can be toxic. Liquid in the ground can become acidic and contaminated, this fluid is known as 'leachate'. In old landfill sites there were risks that if water in the ground were contaminated it could find its way into streams and rivers and potentially harming wildlife and the food chain.

Modern landfill sites now operate under very strict guidelines designed to protect the environment from pollution, the sides are sealed with clay or plastic liners and monitored for any contamination. Any methane gas produced from rotting waste can be collected to generate electricity.

The waste is weighed before dumping in landfill to calculate the charge per tonne, it can be very expensive. Once 'dumped' a compactor drives over the waste, to make sure it is squashed and broken up as much as possible

2. INCINERATION

Disposing of rubbish by burning in an incinerator can produce gases, which could be used as fuels e.g. hydrogen, methane and ethane.

An incinerator that burns 400 tonnes of rubbish a day could provide enough energy to heat 2400 homes.

3. GREEN WASTE

Grass cuttings, hedge clippings, weeds and leaves can be recycled. This type of organic material comes from gardens and from the maintenance of parks and public areas.

The household garden waste can be collected in garden waste bins and taken to recycling centres where the material is composted. This can then be packaged and sold in garden centres. Using this type of compost also means that the amount of compost from peat bogs is reduced so that these areas can be protected.

Households with gardens can compost their own garden waste. Even small gardens could benefit from a wormery, which produces liquid plant food as well as compost.

4. RECYCLING

Recycled materials can be categorised into two main types:

- Pre – consumer. This is where the material has been generated as scrap or waste during the manufacture of the products. They are also called 'post industrial' materials.
- Post – consumer. This is where materials have been retrieved after they have been used for the purpose for which they were originally manufactured. 'Post consumer' material for recycling is collected from homes or recycling banks in public car parks. It is then taken to appropriate processors for recycling.

Here is some information about various recyclates.

Recycling Paper

One ton of recycled paper uses: 64% less energy, 50% less water, 74% less air pollution, saves 17 trees and creates 5 times more jobs than one ton of paper products from virgin wood pulp.

Recycled paper is made from waste paper, usually mixed with fresh wood pulp. If the paper contains ink, the paper must be deinked. Deinking also removes fillers, clays, and fiber fragments.

Almost all paper can be recycled today, but some types are harder to recycle than others. Papers that are waxed, pasted, or gummed—or papers that are coated with plastic or aluminum foil—are usually not recycled because the process is too expensive. Paper should be separated into different sorts for recycling i.e. you shouldn't mix newspapers and cardboard boxes together for recycling. This is because different grades of paper are recycled into different types of new products.

Unlike most other recyclables, paper cannot be recycled over and over again. Eventually the fibers become too weak and short to be used again. That is why virgin paper fiber is usually mixed with recycled paper when new paper products are made. Most cardboard boxes are a mixture of 50 percent new and 50 percent recycled fibers.

Making recycled paper does require fewer chemicals and bleaches than making all-new paper. Although recycled paper is less polluting than paper made from wood fiber, both processes produce different by-products. Paper mills may emit more sulphur dioxide, but recycling mills may produce more sludge. De-inking results in 22 pounds of sludge for every 100 pounds of wastepaper recycled.

Paper recycling does mean fewer trees are used to make paper, but all-new paper is almost always made from trees specifically grown for papermaking. A tree harvested for papermaking is soon replaced by another, so the cycle continues.

Recycling Aluminium

Aluminium is one of the most recyclable forms of packaging that exists.

It has been estimated that in the UK over 4 thousand million aluminium drinks cans are used every year.

Aluminium is an excellent recycling material, when aluminium is re - melted it does not change its chemical composition. However many times it is melted it is still perfectly good to make new cans. Aluminium cans can be identified quite easily because they are not magnetic. They often have an 'alu' symbol on them and have reflective shiny bottoms.

Empty cans are safe and easy to transport. They are light, they can be easily crushed, you can't break them and there is no limit to the amount that will be accepted at a recycling plant. Economically the benefits are huge. We can save 95% of the original energy needed to make cans from raw materials by recycling.

The first purpose built aluminium recycling plant in the EU was at Warrington in the north of England. It became operational in 1991 and had the capacity to recycle over 50,000 tonnes of aluminium cans a year. The collected drinks cans were turned into can rolling sheet ingot which was then used to make ...more drinks cans. This is called a closed loop recycled product

Recycling Glass

Glass bottles can easily be re-used. Dairies, for example, collect used milk bottles, wash them and re-use them. If they can't be re-used, they can easily be recycled.

Most glass containers such as medicine bottles, jam and sauce jars, olive oil bottles, coffee jars, wine and beer bottles can be recycled through the household collection service or at local bottle banks.

Recycling plant machines will remove tops, lids and other non-glass bits from the broken mixture. The glass is ground up into small fragments. The broken glass is fed into a furnace with fresh raw materials. The furnace heats the mixture to 1500°C. Over half the mixture going into the furnace could be recycled glass waste.

Recycling Plastics

Recycled plastics are effective because:

There are more uses for plastics and as a result the demand for raw materials is increasing. Recycled plastics will help prevent the depletion of natural resources.

Most plastics do not break down when they are recycled. The process does not shorten the fibres, strands or grains within the material and therefore does not reduce the strength of the material

- £27 million worth of plastic bottles were disposed of at a cost of £45 million.
- 360 million plastic bottles were recycled in 2002.
- It takes 20,000 plastic bottles to make up 1 tonne.
- The sales value of 1 tonne is £123.
- 18,000 tonnes of plastic bottles were recycled in 2002. This meant a saving of 18 million kWh of energy saved.
- 330,608 tonnes of plastic packaging waste in total was recycled in 2002 (DEFRA).
- There are recycling schemes in 238 local authorities.
- It takes 40% less fuel to transport drinks in plastic bottles compared to glass.
- It takes 25 x 2Litre plastic bottles to make 1 adult fleece jacket.
- Recycling just one plastic bottle could save enough energy to power a 60 W light bulb for six hours!

The Recycling Process

Due to the different characteristics of other types of plastics, recycling techniques may vary.

For example, translucent, white, milk bottles are made of HDPE, (sometimes called natural because of the colour), this material can be made into any colour when it is recycled. Natural plastic can be dyed any colour, while any other coloured plastic are mostly dyed black after processing.

LDPE - is less dense and more flexible than HDPE. The scrap is hand sorted and baled at the recycling plant. Special grinders are used to handle the thin film. It is then washed to make new products (plastic bags etc.)

PET - is colour sorted, ground and washed. It is denser than polyethylene and sinks in water. This allows the plastic caps and labels to be floated off. It is then washed to make new products

The largest use of PET is in textiles. Carpet companies can use 100% recycled resin to make polyester carpets. It can also be spun to make fibre fillings for pillows, quilts and jackets. PET can also be rolled into clear sheets or ribbon for VCR and audio cassettes. A large quantity goes back into making bottles. A very versatile material.

The Future

As natural resources are becoming more precious, manufacturers are under pressure to make their products easier to break down into their components for re-cycling purposes and looking for alternative materials for components

Plastics and recycling, some useful information

- 11% of all household waste is currently plastic, 40% of this is plastic bottles.
- 3% of household plastics are currently recycled.
- Kerbside collections account for 5 – 10 kg of plastic bottles per house per year.
- 9.1 billion plastic bottles are disposed of annually, that's 455,000 tonnes.
- £27 million worth of plastic bottles were disposed of at a cost of £45 million.
- 360 million plastic bottles were recycled in 2002.
- It takes 20,000 plastic bottles to make up 1 tonne.
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