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3A Market Square, Crewkerne,
Somerset, TA18 7LE.
Tel: 01460 271717
E-mail: info@ypte.org.uk
Web site: www.ypte.org.uk
Director: Peter Littlewood
Author: Morna Sims
Design: Vanessa Adnitt
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What A Load Of Rubbish!

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Every day we throw things in the bin. It could be drinks cans, crisp wrappers, paper, left-over food, broken toys, anything. We usually do it without thinking twice. Somebody else then takes it away and we never see it again. But have you ever stopped to think about where all that rubbish goes? Does it vanish into space? Does it vapourise into nothing?

Read the story about Marvin's adventure – he finds out the hard way!



It was 6.00 o'clock in the morning and Marvin the mouse was just finishing his last trip round the kitchen sideboard when "Whoops!", he fell head first into the kitchen bin....

"Mmmm, yummy, I can nibble on all these left-over food scraps" he thought as he tucked into a chunk of mouldy cheese.

A few biscuits and a ham sandwich later, he was very full and decided to curl up and have a little snooze in an old jam jar.

Marvin woke with a jump as Mrs Kaminski pulled out the bin liner, tied it up and took it outside onto the pavement. "Hmm", thought Marvin. "Now I'm in a mess! I'm stuck in this stinky old bin and any minute now the refuse collectors will come and take me away!"



He tried to climb out of the bag but couldn't find a way out. Within minutes he heard the growling engine of the rubbish lorry as it trundled its way along the road towards the Kaminski's house. "Here we go, wey hey!" he squealed as someone swung the bag up and into the back of the lorry.

The bag burst open as it landed, so Marvin escaped through the hole and scurried up and out of the huge pile of rubbish bags. As he scrambled around inside the truck (oh the smell!), Marvin noticed all sorts of bits and pieces that people had thrown out. Amongst all the food, empty cans and stinky nappies, he spotted a mobile phone, some shoes and lots of books. Marvin was starting to scale the side of the truck and had just reached a small ledge when a huge rumbling growl started up and the truck began to shudder. "Eeek!" he squealed and gazed in terror as the giant crushers in the truck came down and squashed all the rubbish - including the jam jar where he'd had his snooze. "Wow, I'm glad I'm not in the bag now - I'd be flattened!" thought Marvin as he watched from the safety of the ledge.

Just as he was about to leap up and out of the truck to safety, the truck began to move. "Oh well," he sighed "I'll just wait until it stops at the next house". But the truck didn't stop. Marvin had no idea where it was going so he just sat on his little ledge and waited. And waited. And zzzzzzzzz soon he was asleep again.



He awoke to the noise of dozens of trucks grumbling and beeping. Peering over the side, Marvin saw a humungous hole in the ground and all the trucks were reversing up to the edge and tipping their rubbish into it. On top of the rubbish there was another big truck with huge wide spiky rollers driving backwards and forwards, flattening it all ("bye bye books, bye bye mobile phones." Marvin whispered to himself). Although it all looked horrible Marvin had to admit that it would be great fun to drive one of those big machines!



A little further away there were giant diggers taking soil from a huge heap and piling it on top of yet more flattened rubbish. Way in the distance Marvin could see a big hump covered in young bright green grass. "Could there be even more rubbish under that hill?" He wondered. There was rubbish everywhere. Marvin had never seen or smelt anything like it. "So that's where all the houses' rubbish goes." he pondered. "It's buried in the ground. What an ugly, smelly, noisy place."

He quickly scuttled out of the truck and scurried his way to the safety of the sickly looking trees at the edge of the dump. Marvin realised that if he wanted to get back to the Kaminski's house where he lived, he'd have to stay at the dump until he could hitch a lift back on the rubbish lorry a week later! So that's exactly what he did.

During that week Marvin had a lot of adventures and he learnt a lot about rubbish!

What kind of adventures do you think Marvin had at the dump? What kind of rubbish do you think he saw?

Your turn: Write a short story about one of Marvin's adventures during his week at the tip.

Do you think it's a good idea to put all our rubbish in a hole in the ground? What would we do if the rubbish collectors never came and collected our rubbish ever again?

How do you think the story would be different if it had taken place in 1208 rather than 2008 (clue: have you ever wondered why a bin is called a 'dustbin'?)?

What a lot of questions! Let's look at some of the facts to try to find the answers.

Stinky Old Rubbish

– and lots of it!

Every year UK households throw out more than 30 million tonnes of rubbish. That's enough to fill 3.5 million double-decker buses (which, if placed end-to-end would stretch from London to Sydney, Australia, and back)! If you add industrial and business waste the total comes to 434 million tonnes – enough to fill a large football stadium in a week.

That's a lot of rubbish and, and how we get rid of it is becoming more and more of a problem. Why?

- ◆ **The population** (number of people in the world) is going up and up every year so more and more food packaging, paper, etc is being used and thrown away.

- ◆ **People are wealthier** now and goods are cheaper so we can afford to throw more things away and replace them with new.

- ◆ **More packaging** is used for food and goods.

- ◆ **There is more pressure** these days to upgrade things like mobile phones, TVs and laptops so the old ones are thrown away.

- ◆ **There are more cheap disposable items** around now than ever before. We have become a 'throw-away' society. Polystyrene cups, disposable cameras, plastic bags and disposable nappies, for example.



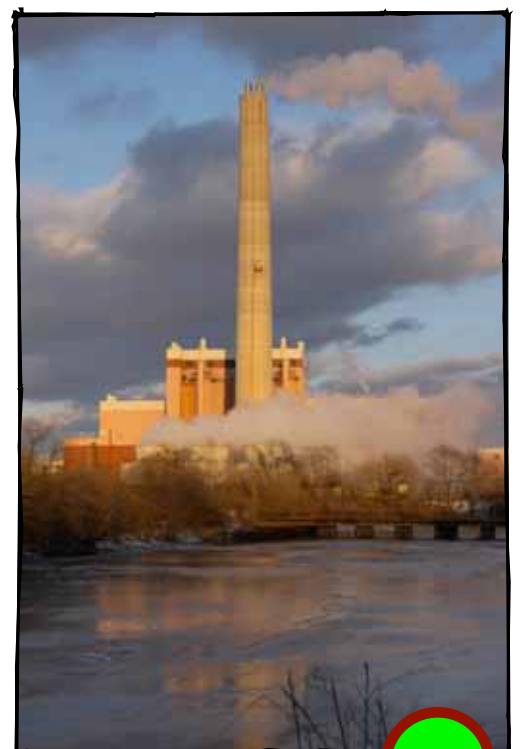
One of 3 things then happens to our rubbish:

- 1) **Burn it (*incineration*)**
- 2) **Bury it (called *landfill*)**
- 3) ***Recycle* it (turn it into something else)**

Incineration

Another way to get rid of our rubbish is to burn (*incinerate*) it in huge commercial furnaces that reach extremely high temperatures, and then bury the ash. The problem with incineration is that not all waste burns easily (e.g. metal) and the fumes and smoke given off by burning are often poisonous and contain several greenhouse gases which also damage the environment.

In the old days, before central heating and the invention of plastic, most houses used to burn their rubbish on their house fires. This would help heat the house as well as get rid of the rubbish. The ash (or dust) from the fires would then be put in a *dustbin*, which was then collected in a *dust cart*. That's why we call bins *dustbins*! The problem now is that fewer people have open fires and we produce too much rubbish, a lot of which won't burn well on a household fire, such as plastic and cans.



Landfill

At the moment, 78% of our rubbish in the UK is buried in dumps, or landfill, as Marvin the mouse discovered. This used to be considered the best option as there was plenty of space, and once the rubbish was covered with soil, it was out of sight and apparently gone forever. But landfill isn't actually such a good thing after all.

- We are running out of space for landfill. New York City has already filled up their sites and 11,000 tonnes of rubbish now has to be taken by lorries beyond the city limits 480km every day.
- Most of the rubbish we put into landfill doesn't **biodegrade**, (rot down) easily, which means it can stay in the ground for hundreds of years, in some cases. Look at how long it takes these items to biodegrade:

Aluminium can: 300 years
Disposable nappy: 500 years
*Glass bottle: Never
(*3000 year old glass has been dug up in the Middle East!)

Plastic bottle: 450 years
Polystyrene cup: Never
Wool jumper: 1 year
Paper bag: 1 month

Notice how the more natural materials, like wool and paper, rot down more quickly than man-made materials like plastic.

- As these things slowly biodegrade, they give off gases and liquids which are bad for the environment. The gases include **methane** which is one of the **greenhouse gases** which contribute to climate change (see the Conservation Education issue 'Climate Change'). Methane will be one of the smells that Marvin found so horrible when he found himself at the tip! The liquids that come off rotting waste are often toxic (poisonous) and can trickle into the soil or nearby streams where they poison the animals and plants living there.
- If we keep throwing things away, we need to replace them with new ones. Making new goods uses a lot of the Earth's **natural resources** such as oil and trees which are becoming more and more scarce.



What we need is a more **sustainable** way of living, where we produce less waste and use less of the Earth's natural resources. This way we could keep the planet healthier for longer.

So how can we be more sustainable? You may well have heard of the Three 'R's' already:

Reduce, Reuse, Recycle!

Recycling

This is when certain items of rubbish are crushed or melted down and turned into something else to be used again. Half our rubbish is recyclable. Recycling uses less energy than making something new from scratch and it uses less of the Earth's natural resources.

Lots of materials can be recycled:

Glass e.g. bottles and jars Paper and cardboard
Aluminium e.g. drinks cans Plastic e.g. bags and bottles ...and many more.

Rubbish for recycling is either collected from your house (called 'kerbside collection') or we have to take it to special bins at a recycling centre, where we separate the rubbish into the different types. Large lorries then come and collect it for recycling.

Recycling glass

At the moment 14 million glass bottles and jars end up in landfill in the UK every year. Glass is made from sand, sodium carbonate and limestone, which all come from the earth. If we recycled more glass, less of these precious resources would have to be dug up.

Glass bottles and jars are often melted down and made into new bottles. But sometimes the glass isn't suitable to be made into another bottle so it is crushed down and used as 'glassphalt' for road surfaces or the reflective surfaces of road signs.

Recycling glass uses 25% less energy and produces 20% less **carbon dioxide** (another greenhouse gas) than making a new bottle from scratch. Glass can be recycled over and over again.

- Recycling one bottle saves enough energy to run a 100 watt light bulb for 4 hours.

We are pretty good at recycling glass in the UK (we save enough energy each year to launch 10 space shuttle missions!), but we could do better. Only 50-60% of the UK glass waste is recycled at the moment. Imagine how much energy we would save if we all recycled all our glass!

Recycling plastic

Plastic is made from oil (which is drilled from under ground or under the sea) and it can be recycled too. There are many different types of plastic, such as bottles, bags, cling film, cellophane etc. Lots of plastic rubbish ends up in landfill or being dumped in or near the sea so the world's beaches and oceans are littered with floating rubbish that takes hundreds of years to decompose.

- It is estimated that there are 46,000 pieces of plastic litter floating in every square mile of ocean on Earth.
- Approximately 100,000 sea birds, whales, seals and turtles die each year as a result of eating or becoming tangled up in plastic rubbish.

Plastic jacket anyone?

When plastic is recycled, it can be made into all sorts of new things, from 'fleece' jackets (one jacket can be made from 25 plastic bottles!) to picnic benches and car park bollards.

Plastic bags are one of the biggest problems in terms of waste. Each year 17.5 billion plastic bags are produced in supermarkets in the UK alone, most of which are only ever used once again (if at all) before being thrown away. But these, too can now be recycled in many towns and villages across Britain.

Most plastic waste is from packaging of goods and food:

- In 2001 UK households produced enough packaging waste in a week to fill 245 jumbo jets (8.4 million tonnes per year).
- Annual plastics recycling in the USA saves enough energy to power a city the size of Atlanta, Georgia for one year.

Your turn: Can you imagine life without plastic? Make a note of each time you use plastic during your day. Try and think of an alternative every time. For example, instead of a plastic milk bottle, it could be made from glass (which could then be returned, washed and re-used again and again).

Recycling metal

Drinks cans, food tins (beans, soup etc) and foil packaging are made of metal. So are cars, fridges, cookers, bikes..... Most metals can be recycled.

Aluminium is one of the most common metals on earth. It is made from melted bauxite which is mined from underground. Bauxite is only found in areas of Tropical Forests and mining it is difficult, requiring a lot of energy. It produces a lot of waste, causes pollution and often destroys rainforests. Bauxite may also run out one day.



Aluminium is one of the easiest and best metals to recycle (it can be recycled over and over again): it saves 95% of energy and causes 95% less air pollution when it is recycled compared to when it is made from fresh resources.

- If all the aluminium cans in the USA that ended up in landfill were stacked end to end they would reach the moon in just 5 weeks!
- Brazil recycles 87% of their aluminium. The USA recycles only 50% of theirs; enough is thrown away every three months to rebuild their entire commercial airline fleet!
- 20 aluminium cans can be made out of recycled materials with the same amount of energy it takes to make one new can.

Lots of bigger bits of waste metal can be sent away as scrap (i.e. used again). The scrap metal business is an industry in itself.



Recycling paper

Does paper grow on trees? Well yes, sort of! Paper is made from pulp, which is mashed up wood, which comes from trees. 40% of all trees cut down are felled to make paper. A natural forest half the size of the UK is lost every year in order to make paper, and not enough trees are being planted to replace them – it is **unsustainable**.

The production of paper uses a lot of chemicals, energy and water. Paper is recycled by shredding it and soaking it to a pulp before drying it out to make more paper. It is easy and recycling uses 60% less water, 40% less energy and cuts air pollution by 74%.

As a nation, we are getting better at recycling. In 2006 14% of our rubbish was recycled. Now it is 33%.

But for recycling to work properly, people need to buy recycled products or all that recycling is a waste of time. See 'Do Your Bit' below.

Recycling is all very well and important to do, but wouldn't it be even better not to throw things away in the first place?



Re-use: Waste Not, Want Not!

Next time you go to throw away a jam jar, for example, even if it's going to be recycled, just think to yourself: could that jar be used again for something else? Does someone you know make their own jam? Or does Dad need a jar in the garage for his nails? Or do you want a pot for all those hair scrunchies or pens you keep losing?

Lots and lots of items can be used again. Envelopes, large plastic yoghurt cartons with lids, ice cream tubs, plastic bags, drinks bottles, the list is endless.

Your turn: Make a rubbish sculpture! Well, make it out of clean items such as yoghurt pots, tin foil, string, plastic tubs, cereal packets saved from the rubbish bin...

If you do want to upgrade your mobile phone, TV, laptop, lawnmower, fridge, sofa or whatever, there is probably someone out there who might be able to give your old one a good home. Ask around or advertise it first to avoid sending it to landfill. 'Freecycle' is an internet network of people who get rid of and receive items for free – this keeps rubbish out of landfill and helps people find things they need without paying for new ones. See 'useful websites' below.

Perhaps there should be 4 R's – **Repair!** Many items are thrown out simply because they have broken and need a simple repair. Find the glue or get out a needle and thread and extend the life of items that can be mended. Sadly these days it can be cheaper and easier to buy some items, such as a new TV than have it repaired. If something is broken, before you throw it out, just think whether its life can be extended by repairing it.

- Old fridges in the UK can be reconditioned and sent to poorer African schools and hospitals.
- In some African countries, old tyres are made into sandals.

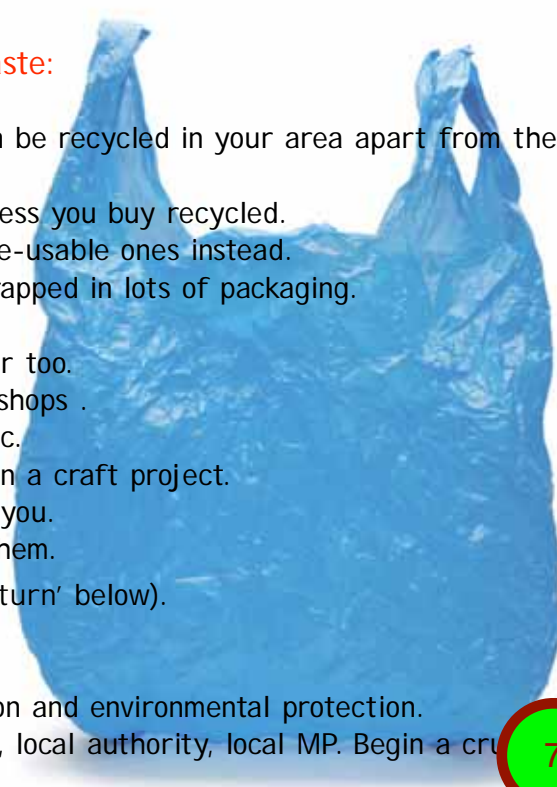
Reduce! Reduce! Reduce!

This is by far the most effective way of solving the landfill problem: reduce the amount of waste we produce in the first place. Recycling and reusing go a long way to helping reduce our waste, but if we bought fewer things in the first place, avoided disposable items, and bought food and with less packaging on, we wouldn't have to do so much recycling and reusing in the first place!

Do Your Bit...

Here are some ideas on what you can do reduce waste:

- ❖ Recycle as much rubbish as you can. Find out what can be recycled in your area apart from the kerbside collection – you'll be surprised!
- ❖ Buy recycled products – you're not really recycling unless you buy recycled.
- ❖ Say no to plastic bags when shopping. Take your own re-usable ones instead.
- ❖ Buy products (such as vegetables) loose rather than wrapped in lots of packaging.
- ❖ Try to buy things that can be refilled.
- ❖ Buy in bulk – this saves packaging and is often cheaper too.
- ❖ Take any unwanted clothes, toys, books etc to charity shops .
- ❖ Avoid disposable cameras, nappies, pens, cups, plates etc.
- ❖ Wash and collect items of rubbish that could be used in a craft project.
- ❖ Freecycle unwanted items – there's a local group near you.
- ❖ Hire tools for infrequent big jobs rather than buying them.
- ❖ Compost kitchen waste or make a wormery (see 'Your turn' below).
- ❖ Repair things if you can.
- ❖ "Don't choose it if you can't reuse it".
- ❖ Join and support charities that promote waste reduction and environmental protection.
- ❖ Pester people to do their bit – your family, local shops, local authority, local MP. Begin a crusade in your neighbourhood to get everyone to.....



...Reduce! Reuse! Recycle!

Your turn: Make a wormery:

Worms make short work of old fruit and veg peelings and turn it into rich liquid compost for the garden. The original recyclers! Here's how to make a mini wormery for your kitchen waste:

Place 5cm of damp soil containing a few earthworms in a large glass jar

Add a 5cm layer of damp food scraps and leaves

Repeat this layering of soil then scraps

Leave the lid off and keep the jar on a window sill

Keep moist and watch!



"We wish you a waste-less Christmas!"

Yes, Christmas will be here before you know it and it is one of the most wasteful times of the year. Here are a few mind boggling facts about Christmas waste:

- Approximately 1 billion Christmas cards go in the bin in the UK every year.
- 7.5 million Christmas trees were bought in 2001. Only 1.2 million were recycled.
- 83km² (an area the size of Guernsey) of wrapping paper was thrown away in 2001.
- 750 million extra bottles and 500 million extra cans were thrown away.

Your turn: Make this year a low-waste Christmas by trying the following:

★ Buy recycled Christmas cards or don't send them this year – send a festive email instead.

- ★ Just send one card to all your class mates rather than one each.
- ★ Make your own Christmas decorations out of recycled items.
- ★ Avoid buying wrapping paper (make your own) or at least buy recycled wrapping paper.
- ★ Make your own gift tags from old cards and keep this year's cards to make tags for next year.
- ★ Recycle any waste paper, cards, trees etc and compost as much waste food as possible.
- ★ Unwrap your presents carefully and keep the paper to use next year.
- ★ Don't use disposable plates, cups and cutlery. Get your friends to help wash up instead!
- ★ Buy gifts that are either long-lasting, much needed or from charity shops. Ethical gifts are useful for that person that has everything.
- ★ Give money, vouchers, cinema or theatre tickets rather than an unwanted gift.
- ★ Buy a Christmas tree grown in the UK and recycle it or...
- ★ Buy one with roots so you can plant it in your garden and use it again next year or...
- ★ Buy one artificial tree to use over and over again.
- ★ Send any of your unwanted gifts to charity or have a present swap session at school!

Really Rubbish Facts!

Here are some extra facts to make you stop and think:

- ◆ If everyone in the world consumed as much as the average person in the UK or USA, we would need 8 more planet Earths to keep going.
- ◆ Beluga whales in the St Lawrence River, N America, are classified as toxic because they have so much pollution from waste in their systems.



- ◆ Every tonne of recycled paper saves 17 trees.
- ◆ You *can* buy Sunday papers that aren't wrapped in plastic. Try the local corner shop rather than the supermarket.
- ◆ 90% of all the waste created from the construction for the 2012 London Olympic Park will be recovered and reused or recycled.
- ◆ Bronze scrap was collected and reused in Europe as long as 4000 years ago!
- ◆ The first landfill site ever recorded was in Knossos, Crete in 3000BC.
- ◆ The first bottle banks appeared in the UK in 1977.
- ◆ By 2050 the world's population is expected to have reached 9 billion.
- ◆ 15 million mobile phones are thrown out every year – they would last 8 years if they weren't upgraded.
- ◆ One mobile phone battery can pollute 600,000 litres of water (1/3 of an Olympic swimming pool).
- ◆ When Ireland introduced a charge for plastic bags in 2002, within a year 10 times fewer bags were used by shoppers.
- ◆ Disposable nappies make up 2% of UK household rubbish. They would fill 70,000 double decker buses every year which would reach from London to Edinburgh if lined up end to end.
- ◆ We use more than 6 billion glass bottles and jars in the UK each year – it would take more than 3½ thousand years to sing 'There were 6 billion green bottles hanging on the wall'!

Useful websites:

www.yptenc.org.uk
www.ecofriendlykids.co.uk
www.foe.co.uk
www.wastewatch.org.uk

www.kidsagainstwaste.org
www.recycle-more.co.uk
www.environment-agency.gov.uk
www.defra.gov.uk

www.watchyourwaste.co.uk/kids
www.wasteonline.org.uk
www.greenpeace.org.uk