Glass

What is glass made from?

Glass is made from 3 raw materials – limestone, sand and soda ash. Soda ash is the chemical sodium carbonate, and is a natural grey/white powder. Limestone and sand are also natural materials, and are taken out from the ground from quarries. Quarries change the natural landscape and disturb local people through noise from explosions and the heavy lorries, which take away the rock and sand.

What happens to it?

Glass put into the bin will go to landfill, where it will never rot down. If you take your glass to a bottle bank, it will be taken to a recycling factory where it will be crushed and cleaned, and melted down and used to make new bottles and jars and also glass fibre insulation - which helps to keep buildings warm and save energy.

Where does it go?

Our glass is collected from all over the Highlands, and taken to Bonneting near Edinburgh to be recycled.

What about Reuse?

Jam jars make excellent pen pots, vases, storage containers and candle holders. Glass milk bottles from the milk delivery service are returned, washed out and used again as many as 40 times! Unfortunately, now there are less and less dairies providing milk in reusable glass bottles.

Glass Recycling Facts

- On average, every family in the UK consumes around 500 glass bottles and jars every year. This is about 8 percent of our waste (by weight).
- Sadly, five out of six glass bottles are thrown straight into the dustbin.
- The energy saved from recycling one glass bottle is enough to power a 100-watt light bulb for an hour, or power a computer for 25minutes.
- Recycling one glass bottle causes 20% less air pollution and 50% less water pollution than when a new bottle is made from raw materials.
- Glass can be recycled without any loss of quality again and again and again and again and again!

Further Resources

For more information and games visit:

British Glass - www.recyclingglass.co.uk - general information on glass, teacher's area and games.

Waste Online - www.wasteonline.org.uk - a glass information sheet.

Textiles

What are textiles?

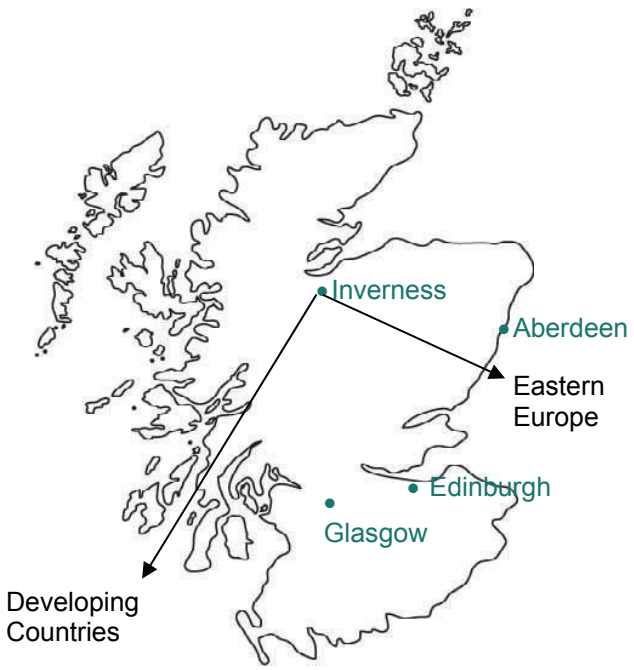
Textiles are natural or man-made fibres. Natural fibres are things like cotton, wool and silk. Man-made fibres include nylon, polyester and acrylic. The fibres are knitted, woven or bonded together to make textiles. Things made from textiles include our clothes, bedding, curtains, carpets, cleaning cloths and soft toys.

What happens to it?

Textiles that are put in the bin will be sent to landfill. While some of the natural materials will eventually break down, it may take several years before they even start to rot. Textiles which are collected for recycling from Council textile banks are sorted into different categories so that they can either be sold for reuse (e.g. sent to less well-developed countries) or recycled as sound-proofing or industrial cloth.

Where does it go?

Textiles from recycling banks in Highland are sorted at various locations in Scotland and beyond. Much of the clothing is sent to Eastern Europe and developing countries. As an alternative to using a textile bank, you can donate your waste textiles to a charity shop. The clothes will be sorted out, and the ones which can be worn again will be sold to raise money for the charity. You could also give them to a friend or take them to a jumble sale.



Textile Recycling Facts

- Textiles make up about 3% (by weight) of the average UK household bin.
- At least 50% of the textiles going to landfill are recyclable.
- If everyone in the UK bought one reclaimed woollen garment a year, it would save an
- average of 371 million gallons of water (the average UK reservoir holds about 300 million gallons) and 480 tonnes of chemical dyestuffs.
- Over 70% of the world's population use second hand clothes.

Further Resources

Waste Online - www.wasteonline.org.uk - a textiles information sheet.

Paper & Cardboard

What are Paper and Cardboard made from?

Paper and cardboard are made from cellulose fibre, most commonly pulped wood, although other organic, once living, materials can be used including rags, cotton, grasses, sugar cane, straw, waste paper and even elephant dung.
Think of all the things that are made of paper and cardboard: writing paper, exercise books, bus tickets, wrapping paper, newspapers, comics, magazines, cereal boxes, birthday cards, calendars, packaging around toys, electrical appliances and all sorts of other goods.

What happens to it?

When paper and cardboard are put in the refuse bin they are sent to landfill where they will rot and give off methane gas (remember they came from once living, organic material).
Paper and cardboard segregated for recycling is sent to a paper mill where it is chopped up and mixed with water to make a pulp slurry; ink and other materials such as clay and short fibres are removed. Paper fibres can be recycled 5-7 times before they become too short to be recycled again. Shorter fibres can be used to make card but longer fibres from new wood pulp are often added to improve strength for making finer paper.
The pulp slurry is sprayed onto a huge flat wire screen which is moving very quickly through the paper machine. Water drains out, and the fibres bond together. It is then pressed between rollers which squeeze out more water and compress it to make a smooth surface. Heated rollers dry the paper which is then slit into smaller rolls or cut into sheets.

Where does it go?

Paper and cardboard put into the blue recycling bins is sent to one of three Materials Recovery Facilities (MRFs) at Evanton, Perth and Grangemouth where is it separated into paper and cardboard, baled then sold on the world market – some will be reprocessed in Britain but some will be exported to other countries. The material from the 'paper only' banks at Recycling Points and Centres is of higher quality (which is why it is important that people don't put cardboard in these containers). It is transported to paper merchants who sell it to two paper mills in North Wales and North West England.
In Britain in 2010 nearly 46% of recovered paper was reprocessed in Britain, another 12% in other EU countries, about a third in China and the remaining 9% in other parts of the world.

Paper and Cardboard Recycling Facts

- On average, each household in the UK throws away 2-3 kg of newspaper and magazines each week.

- For every tonne of paper used for recycling the
- savings are: at least 30,000 litres of water, 3-4000 KWh electricity (enough for an average 3 bedroom house for a year) and 95% of air pollution.

- It is a common misconception that recycling waste paper saves trees. Trees for paper making are grown and harvested as a long term crop with new trees planted to replace those cut down. However, environmental problems can occur when old forests with many different species of trees and rich habitat for wildlife are replaced by managed conifer forests in order to meet the demand for paper.

- 12.5 million tonnes of paper and cardboard are used annually in the UK.

Further Resources

Waste Online - www.wasteonline.org.uk - a paper information sheet.

www.recycledpaper.org.uk - confederation of paper industries website with lots of information fact sheets about paper

Steel Cans

What is steel?

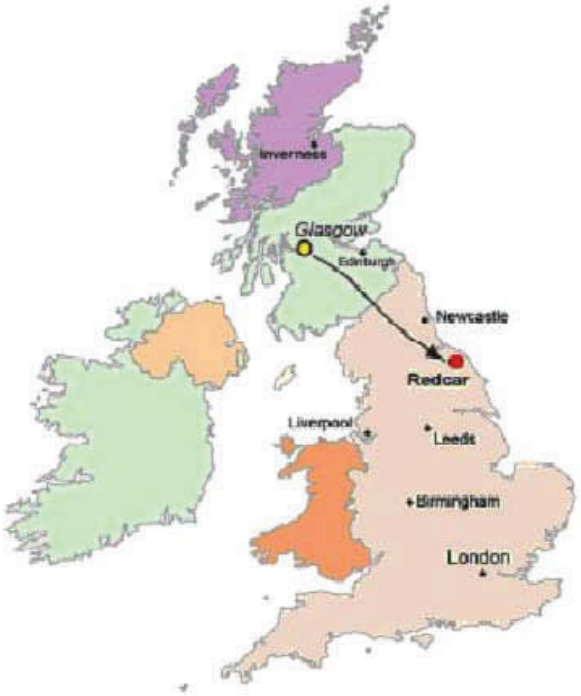
Steel is made from 3 main ingredients: iron ore from mines, limestone from quarries and lastly old, used steel. It is used for lots and lots of everyday things - most food and pet food cans, 1/3 of drinks cans, aerosols and paint cans, knives and forks, washing machines, cars, paper clips, bridges and lots, lots more!

What happens to it?

If steel is put in the bin it will go to landfill, where it may take hundreds of years before it rusts and disappears. Even then tiny bits of it will be left behind polluting the area. If steel is put in a can bank for recycling, it will first of all be separated from aluminium cans using a magnet (steel cans are magnetic and aluminium cans are not). The steel cans are then taken to a de-tinning plant where the tin lining is removed and saved for re-use. This tin lining is used to protect the steel from starting to rust, which would happen if the steel came into contact with the food in the can. The steel that's left is melted down to be used in making new steel.

Where does it go?

Steel cans from the can banks collections are taken to Invergordon where they are crushed and baled. They then go to Redcar in Teesside for reprocessing via a merchant in Glasgow. The cans from the mixed kerbside blue bin collections are separated from the other materials at a Materials Recovery Facility (MRF) and supplied to domestic, continental and world markets.



Steel Recycling Facts

- Steel cans have a very thin layer of tin that protects the surface of the can, which is why steel cans are often called "tins".
- Food and drinks cans (both aluminium & steel) make up about 2% of household waste.
- Every year in the UK we use 13 billion steel cans which, if placed end to end, would stretch to the moon three times over!
- Up to a quarter of every new steel can is made from recycled steel.
- Producing steel from recycled steel saves 75% of the energy needed to make it from raw materials.
- A 60-watt light bulb can be run for over a day by the energy saved from recycling ½ kg of steel (about 23 cans).
- Did you know that steel cans have been used for food packaging since 1810, when Nicholas Appert responded to Napoleon's challenge to invent a method of preserving food for the French army?

Further Resources

Steel Can Recycling Information Bureau - www.scrib.org - lots of information on steel cans e.g. the history of steel cans and recycling facts. There's a teacher zone where downloadable packs are available, with a list of other resources available (videos & cds). There is a children's zone with games and information.

Waste Online - www.wasteonline.org.uk - a metals information sheet.

Aluminium Cans

How is aluminium made?

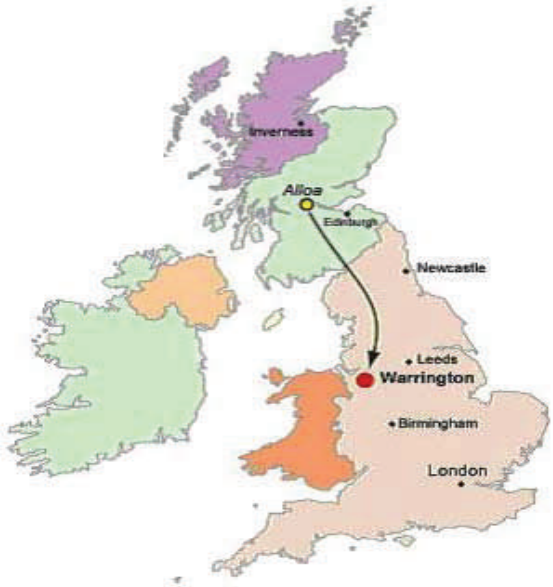
Aluminium is made from bauxite, which is dug out of the ground using big mechanical diggers. Bauxite is found mainly in tropical areas such as Australia, Brazil and West Africa. A white powdery material, called alumina, is removed from bauxite. The alumina is processed into silver coloured liquid aluminium. The aluminium is poured into moulds to make lumps called ingots which can be rolled or moulded into the shapes that are required. Aluminium has many uses: - drinks cans, door and window frames, cars and foil packaging.

What happens to it?

Aluminium that is put in the bin, will go to landfill where it may take hundreds of years before it disappears. Even then tiny bits of it will be left behind polluting the area. Aluminium cans that are placed in can banks for recycling are separated from the steel cans, (the steel cans are removed by a magnet). The cans are melted to make ingots, which are then used to make the required products. Aluminium can be recycled for an indefinite number of times and is used to make new cans and foil and other aluminium products.

Where does it go?

Aluminium cans from can banks are taken to Invergordon where they are crushed and baled. The bales are transported to a merchant in Alloa and then to an aluminium reprocessor in Warrington, England. The cans from the mixed kerbside blue bin collections are separated from the other materials at a Materials Recovery Facility (MRF) and supplied to domestic, continental and world markets.



Aluminium Recycling Facts

- The average annual consumption of aluminium cans in the UK is 1.5kg per person (about 90 cans) or 3.5 kg per household.
- Recycling aluminium can bring energy savings of up to 95% compared with making a can from raw materials.
- An aluminium can sent for recycling today can be made into a new can, filled and be back on the shelf in just six weeks.
- Aluminium can be recycled, without loss of quality, over and over again and again and again and again and again …
- Bauxite ore, which is a raw material used to make aluminium is mined in Australia, South America, China and India. Our recycled cans have made a much shorter journey!

Further Resources

Aluminium Packaging Recycling Organisation (Alupro)- www.alupro.org.uk – visit 'education' for downloadable resources and information about aluminium recycling.

Waste Online - www.wasteonline.org.uk - a metals information sheet.

Think Cans - www.thinkcans.com - downloadable worksheets and teachers notes.

Plastic Bottles

What is plastic made of?

Most plastic used in the world is made from oil; this is a fossil fuel which means it has taken millions of years to form and so is a non renewable resource – we can't replace what we use up in our lifetime. About 4% of the world's annual oil production is used as the raw material for making plastic and another 3-4% is used as energy in its manufacture.

Although over-use of plastic in packaging has become a big problem it does have uses. It is hygienic and very light – which helps to cut down on the environmental cost of transporting goods.

What happens to it?

Plastic put in the refuse bin will go to landfill where it can take hundreds of years to decompose. Plastic tends to be broken down by sunlight – which doesn't occur in a landfill site. Plastic subjected to sunlight in the ocean can break down in as little as a year, but releases toxic chemicals which end up in the guts of animals. Plastic litter on beaches has increased 135% since 1994. Seabirds mistake floating plastic litter for food, and over 90% of fulmars found dead around the North Sea have plastic in their stomachs.

Plastic bottles can now be recycled throughout The Highland Council area, either at most of the Recycling Centres or using the blue kerbside recycling wheelie bin services. The bottles are mostly made of two types of plastic: type 1 (PET) – e.g. water bottles and juice bottles - which can be turned into fleeces and other clothing; and type 2 (HDPE) – e.g. milk bottles and some detergent bottles – which can be made into items such as fencing, garden furniture, water butts, garden sheds and composters.

At present in the UK most plastic sorting is done by trained staff who manually sort plastics into the different polymers (types) and/or colour. Methods are being introduced to sort plastics automatically using laser technology. This will allow a wider range of plastic to be collected for recycling. Following sorting the plastic is either melted down directly and moulded into a new shape, or melted down after being shredded into flakes and then processed into granules.

Where does it go?

The plastic bottles are separated out at a Materials Recovery Facility (MRF) where they are baled up. They are then sold on the global market for re-processing into new products.

Plastic Recycling Facts

- We produce and use 20 times more plastic today than we did 50 years ago.
- Plastic packaging is the largest single use of plastic in the UK and accounts for about 35% of plastics consumption.
- A survey estimated that 24,000 tonnes of plastic bottles were collected in the UK in 2003 – but this amounted to only about 5.5% of all the plastic bottles sold!
- One tonne of plastic is the equivalent of 20,000 two litre drink bottles or 120,000 plastic bags.
- It takes 25 two litre plastic drink bottles to make one fleece garment.
- The amount of plastic waste generated annually in the UK is estimated to be nearly 3 million tonnes.
- About 56% of all plastic waste is used packaging, three-quarters of which is from households.

Further Resources

Waste Online - www.wasteonline.org.uk - a plastics information sheet.

Marine Conservation Society - www.mcsuk.org/what_we_do/Clean+seas+and+beaches/Litter+campaigns/Litter+campaigns

Plastic Oceans - http://www.plasticoceans.net/the-facts/what-a-waste/