

Waste Facts

Working together with local communities, we aim to conserve resources by promoting recycling and reducing the amounts of waste going to landfill.

Here are some astonishing facts about waste we all generate.

General

- The volume of waste produced in the UK in one hour could fill the Albert Hall
- The volume of waste produced in the UK in one day would be enough to fill Trafalgar Square up to the top of Nelson's Column
- In 1 year around 27 million tonnes of household waste are produced, which represents approximately 1.2 tonnes of waste per household
- If we all reduced the weight in our bins by 10%, in a year, this would be a saving equivalent to 8,687 times the height of Blackpool Tower
- It is estimated that up to 90% of what we put in our bins is recoverable - in other words it could be used for something else rather than becoming waste
- We in the City currently recycling about 10.5% of our household waste
- We should be recycling 25%.

Aluminium

- About 4.1 million miles of aluminium foil goes into household waste each year - enough to wrap round the planet 164 times
- Aluminium can be recycled, without loss of quality, over and over again.
- Recycling aluminium can save up to 95% the amount of energy used to produce aluminium from virgin materials

Paper

- In the UK today, nearly 5 million tonnes of paper are being dumped in landfill or incinerated each year
- On average, each household in the UK throws away 2-3 kg of newspaper and magazines each week
- Recycling one tonne of paper saves up to 70% the energy used in manufacturing from virgin materials and requires 40% less water
- You can put newspaper and cardboard into your blue recycling bin or take it to one of the 5 Derry City Council paper banks at our Civic Amenity Sites around the city.
- You can put screwed up paper in your compost, it helps to keep the balance between 'browns and greens' in the Composting process

Steel

- Every year in the UK we use 13 billion steel cans which, placed end to end, would stretch to the moon - three times!
- Producing steel from recycled materials saves around 75% of the energy needed to make steel from raw materials

Glass

- On average, every family in the UK consumes around 500 glass bottles and jars every year - but we recycle less than 25% of these items
- Glass can be recycled without any loss of quality over and over again.
- Derry City Council have placed several glass banks around the city and are currently negotiating with retail outlets for the installation of more.
- Glass produced from recycled glass instead of raw material reduces related air pollution by 20 percent and water by 50 percent
- Recycling just one bottle saves enough energy to power a television set for up to an hour and a half

Plastic

- Nearly 3 million tonnes of plastic waste is generated every year in the UK alone, but only 5% is recycled
- 8 million nappies are thrown away daily in the UK alone and every disposable nappy in landfill still exists as they are not really biodegradable - research estimates they could take up to 500 years to decompose
- Plastic bottles from milk, shampoo, washing up liquid, drinks, and similar can be recycled through the Blue Bin service or at one of our five Civic Amenity Sites.

Waste Types

Organic Waste

Organic waste covers materials that can be degraded by natural microbiological action usually to produce compost. It can come from a variety of sources from vegetable food waste to grass clippings to wood chips. Most businesses in some way generate small amounts of organic wastes that could be successfully composted for re-use in maintaining the flowerbeds or perhaps sold to employees for their gardens at home.

Organic waste is responsible for producing the more polluting materials that emerge from landfill sites. Methane gas and leachate are generated as the waste degrades. Methane is a significant greenhouse gas and potentially explosive and leachate can contaminate ground water and seep into water courses and public supplies. By reducing the volumes of organic material going to landfill these potential sources of pollution can be reduced.

Types of organic wastes

Vegetable based organic wastes e.g. potato peelings, waste from vegetable processing operations, left over salad from a sandwich shop even the banana skins, apple cores and tea bags in your office waste paper bin, can all be composted.

Some organic wastes are not suitable for composting and have a very high pollution potential. These include slurries and manures, abattoir or meat processing wastes. Some of these wastes may be suitable for anaerobic digestion. This type of microbiological process takes place in a specially designed sealed reactor, maintained at a constant temperature high enough to destroy any pathogenic materials in the waste. The result is a solid nutritious compost like material and a treated effluent that can be used as a liquid fertiliser.

Composting

Composting is a simple natural process that relies on the action of common soil organisms to break down the constituents of the waste. It can take place in an old fashioned heap, in a specially designed compost bin or on a larger scale in long heaps called windrows. For successful composting there should ideally be a mixture of waste types, some moisture and it should be turned or aerated regularly. Even without ideal conditions compost will usually result, but it may take longer for the waste materials to fully degrade.

Pyrolysis

Organic wastes can also be used to produce oil and gas by a process called pyrolysis. The waste is heated to a high temperature (250-1000 °C) in the absence of oxygen, breaking down into gases, liquid and an inert ash.

Case Study

Rich Earth Ltd in Bangor produce a peat free soil improver from composted materials and wood chips. The company reports increasing demand for its environmentally sensitive products and they have successfully increased production and established new markets for their product.

Paper

Paper is one material that the majority of businesses handle and it can be relatively easily recycled and reprocessed into a wide range of products.

The recycling of paper used throughout Northern Ireland businesses would reduce the volumes going to landfill considerably and would save those businesses money. Paper and Cardboard make up around 12% of the Commercial and industrial waste generated in Northern Ireland in 2000. Paper also makes up a significant proportion of 'mixed wastes' which accounts for 50% of the total waste volume from commercial premises and is almost impossible to recover or recycle in this format.

Types of Paper

Newspapers and magazines are lowest grade of paper, but can be relatively easily recycled. They usually go to make moulded paper pulp products such as egg boxes, drinks holders or packaging materials. Office waste such as printed or photocopied paper can be high to medium quality, as long as it is not contaminated with paper clips, staples or plastic materials.

Other paper products telephone books, cardboard, cards, envelopes etc. can also all be recycled. It is usually easier and therefore more cost effective if similar materials are collected separately with the minimum of contamination with other wastes.

The Paper Market

The price obtained for paper for recycling is very volatile, depending on the demand for recycled paper products. Business has an important role to play in supporting and maintaining markets for recycled paper products through purchasing these products and returning the waste for recycling.

Successful Paper Recycling

Contractors who collect waste paper for recycling are obliged to be strict on the quality of the material they collect. If they are unable to recycle the materials they may be obliged to dispose of them at their own expense, quickly making the operation uneconomic. Therefore for a recycling scheme to be successful everyone involved must be fully aware of the objectives and understand which materials need to go where. Educating and involving your employees empowers them and ensures they take ownership of such a scheme and there may be an element of 'self policing' with team members ensuring their colleagues are fully aware of the rules. Furthermore, the staff gain a better understanding of environmental issues in the workplace, which may have a follow on effect in the way they perceive waste and recycling in their homes.

If your company handles sensitive or confidential documents, many companies will offer a shredding service that guarantees that these documents will be fully destroyed.

Waste paper and cardboard can also be used in sustainable construction cavity wall insulation.

The national association of paper merchants awards a recycled mark to papers which contain a minimum of 75% genuine waste, this includes off-cuts from paper mills and post consumer waste.

Textiles

Textile recycling is one of the longest running forms of recycling, however in the UK we generate around 650, 000 tonnes of textile waste of which only around 25% are currently recycled.

Types of textiles

All types of textiles can be recycled and they are used in a variety of different ways. The majority of waste textiles generated in the UK arise from household or post-consumer sources. These are usually clothing or household linens. These materials can either be re-used e.g. collected by charities for re-sale or shipping to the developing world or they can be returned to textile mills for reprocessing. This may be as simple as cutting garments up into rags and wipers, or may involved breaking down the garments into thread and re-spinning or combining them with new fibres to make new fabrics.

Post industrial waste textiles arise during the production of yarn and fabric and there is often a potential for in house recycling saving on raw materials and consequently costs.

Textile recycling

Most clothing and household textiles are collected by charities through banks at supermarkets and civic amenity sites. Charities also rely on direct donations at their shops and through door-to-door collections.

The collected materials are sorted by hand into ranges of colours and fabric types. 70% of the clothing collected is re-usable and can be sent for sale in charity shops or sent for use in other parts of the world. It is estimated that most of the clothing that is currently discarded has nearly 60% of its useful lifetime still ahead.

The remainder is sold to merchants for re-use in one way or another. 7% is used as wiping cloths for industrial use, 9% is shredded and used as filling material in insulation and stuffing, 8% is used in fibre reclamation. Only 6% is rejected as waste as this contains the materials that are of little use e.g. zips. (Textile Recycling Association, 1999) Oxfam estimates that for every black bin liner of clothes they are given they receive £2.24 through resale as clothing and textiles for recycling.

Once sold on to a textile mill, the fabrics are graded according to type and colour. A colour range of 30-40 shades can be achieved and this removes the need for re-dyeing saving energy, water and raw materials. Initially the material is shredded back to form the original fibres called 'shoddy', these are then cleaned and carded, blending with new fibres and can then be spun into yarn ready for weaving or knitting.

Industrial textile processes such as carpet making have considerable potential for recycling and re-using textiles are various stages in production. Ulster carpets are able to re-use a high proportion of their yarn, by re-winding bobbin ends onto large reels for reuse in the weaving process. End of line colours are sold on to a merchant for re-use elsewhere. There are savings to be made at the other end of the production process too, cropper dust is the fine shavings from the surface of the finished carpet and this is being donated to a local stables owner as bedding for horses, saving Ulster Carpets on the landfilling charges. The ultimate conclusion to the reduce, re-use and recycle scenario for carpets is exemplified by Interface Inc. in their North American operation they have an evergreen lease schemes for carpets whereby a carpet is leased to a company or householder and once its worn out the company will come and collect it. They re-use and recycle the components to make new carpets which they then lease out in the same way.

Reclaimed fibres from both post consumer and post industrial sources can be used for many diverse uses:

1. Cotton fibres from reclaimed denim are used to make pencils and paper
2. Non-woven material such as felt and pile products can be made from reclaimed material.
3. Knitwear from reclaimed and re-spun yarns
4. Insulating materials for the building industry
5. Fillings and wadding for mattresses and car upholstery

Metals

Scrap metals are an area where the economics and infrastructure of recycling have been long established. Despite fluctuations in the market value of ferrous, aluminium and other metals recycling of these materials has remained consistently economically viable due to the extreme financial and environmental cost of extracting the materials from the raw ore.

Metals accounted for 5% of the waste produced in Northern Ireland in 2000. This relatively small figure reflects the currently high recycling rates for metals, but indicates there are still opportunities for metal recovery from waste

Types of metals

Iron, steel, copper and aluminium are the easiest metals to recycle and are found in a wide variety of materials that can be salvaged for their scrap value.

Steel and aluminium make up most of the metals that can be recovered from End of Life Vehicles. Scrap merchants and car dismantlers may also remove any spare parts for resale before crushing the car and sending the metals for smelting. Under a new EC directive for End of Life Vehicles targets for the recovery or re-use of materials such as this will be set at between 85-90% for 2006-2015.

Other metals are also of value as scrap from sources as diverse as old copper piping to aluminium drinks cans and foil. The aluminium can is the most valuable in terms of its potential for recycling. 95% of the energy used in the production of Aluminium from the raw Bauxite ore can be saved in using aluminium derived from a recycling source. Aluminium foils used in food containers and wrappings can also be recycled although not as successfully as drinks cans and the value of foil can be up to 50% less than that of cans.

Some food cans are made from tin plated mild steel or a mixture of steel and aluminium, but can still be recycled. They need to be washed and crushed and have lower value than aluminium.

All metals have some value, especially the rarer metals such as gold, silver, platinum, vanadium, mercury all of which are used in industrial and manufacturing processes. Reclaiming and recycling these metals either in house within an existing production system or passing on to a specialised reprocessor for the metals to be recovered from the waste often makes economic sense.

Case Study

Bowman Windows in Banbridge manufactures aluminium and pvc window frames and doors. Waste within the aluminium department consisted of offcuts of all shapes and sizes and of different types. These off-cuts were recognised of being of value for recycling and were collected in a skip which was removed by a contractor. However, following a period of staff training the materials were sorted into different skips for slightly different treatment by the recycling company. This has ensured Bowmans are receiving the optimum value for the recyclable materials, successfully turning what was waste into hard cash.

(Source: Armagh and Banbridge Waste Minimisation project)

Plastic

Plastic comes in all shapes and sizes and is an integral part of many commercial operations. It is also one of the materials that takes a very long time to degrade when landfilled and makes up a considerable proportion of waste disposed of each year. By recycling and reprocessing plastic materials Northern Ireland business could save money and improve the local environment.

Types of Plastic

One of the problems with recycling plastics is the fact that there are so many different types. For plastic recycling to be economic these need to be collected separately or need to be sorted before the process can begin.

The Plastics industry has developed a voluntary code for labelling the different plastic materials to aid identification for recycling. They are grouped into 7 categories as follows:

1. PET (Polyethylene tetraphthalate) e.g. 2 litre soft drinks bottle
2. HDPE (high density polyethylene) e.g. containers for liquids such as milk and other household products
3. V (Vinyl) or PVC- Polyvinyl Chloride. These contain high levels of dangerous chemicals and therefore may require special treatment e.g. phthalates, cadmium, lead and tin compounds. These materials are used to make toys as the material is soft and flexible, recent concerns have been raised about the leaching of chemicals from these plastics e.g. when chewed by young children.
4. LDPE: (Low density polyethylene) is used to make plastic bags and carriers
5. PP : (Polypropylene) e.g. ropes, bottle crates and car battery boxes
6. PS: (Polystyrene) is used for packing, insulation, disposable cups, fast food containers etc.
7. Other: includes mixed and multi layered materials

There is an ever-growing source of materials for recycling from agriculture, car manufacturing, packing, construction etc. Plastics as described above are often segregated at source or can be sorted by hand before reprocessing. They can also be identified by analysing the composition, using their different density characteristics, or their different behaviours when an electrostatic charge is applied.

The recycling process

New recycling technologies for plastics are currently under development and include a technique called 'Feedstock Recycling'. This process breaks down the polymer chains of which the plastic is composed and leaves a chemical raw material that can be made into new products.

Other techniques presently in use in the plastics recycling industry include Pyrolysis where the waste is heated in a vacuum to produce a mixture of the different components of the plastic, Hydrogenation, where the addition of hydrogen during heating creates a liquid hydrocarbon, gasification is used to produce new raw materials by heating with carbon monoxide and hydrogen and Chemolysis is where individual plastics are chemically treated and can then be used to make new products of the same plastic.

Uses for recycled plastics

Plastics can be recycled to a variety of uses. Some materials can go back to make new plastic containers, although these are not usually used for food use. The higher density materials can be used for garden furniture and planting containers, PET soft drinks bottles are used in the manufacture of wadding for sleeping bags etc. and to make fleece jackets and other materials can be used for making carrier bags and bin liners.

Case Study

Jordan Plastics Ltd based in Portadown produces polyethylene (PE) packaging and have virtually eliminated waste in their production process by recycling their primary raw materials. Approximately 350 tons per year is recycled from the factory floor and a further 450 tonnes of PE waste is purchased from other sources. The waste film is fed into a dedicated production line and the result is PE granules, which can then be used in a variety of other processes. The savings on raw material costs over the year amount to £100,000.

(Source: Working with the Environment: Case studies of environmental success in NI business, IRTU)

