

NCFE Level 2

Certificate in Understanding Climate Change and Environmental Awareness

CLIMATE CHANGE

SUSTAINABILITY

GLOBAL WARMING

CONSERVATION

RESOURCES

ENVIRONMENTAL PROTECTION

Workbook 2

Section 1: Understand climate change, sustainability and environmental protection

Impacts of resource consumption and waste disposal on the environment

Please read the following as it will help you to answer question 3.

Resource depletion is an impact of resource consumption, this means that resources are used up at a faster rate than they can be replaced. A key example of this is fossil fuels which are being used up but are not renewable, therefore it is important to find other sources of energy. Other examples of resource depletion are in fishing, where waters have been overfished and some species of fish are vastly reduced in number, mining where materials are depleted and the land damaged and in animal populations where hunting takes place. Trees are also at risk when they are felled for timber and paper but not replaced fast enough to make up for the loss.

Examples of resources that are at risk of depletion include:

- Fossil fuels
- Iron and other metals
- Minerals
- Sand
- Healthy soil
- Clean water
- Wild fish
- Crude oil
- Silicon



The impact of waste disposal on the environment is far-reaching. In the first instance the fact that materials are being wasted means that the source of raw materials has been depleted unnecessarily and energy has been used in the process of obtaining them. A lot of waste is sent to landfill sites to be buried which then generates harmful landfill gas. This gas is mainly methane which then contributes to the greenhouse effect. Some waste is incinerated but if plastics are incinerated dioxins are produced, which pollute the air. If chemicals are disposed of, they can pollute the soil and this in turn can harm plant, animal and human life. Surface water contaminated with chemicals can get into rivers and lakes which will impact on the fish habitats and also harm any animals that drink from them.

Plastics getting into rivers, lakes and oceans is a huge cause for concern in terms of the harm to marine life and animals.

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The Great Pacific Garbage Patch case study

The Great Pacific Garbage Patch (GPGP) is a collection of marine debris (litter that ends up in oceans, seas and other large bodies of water) in the North Pacific Ocean. This area covers waters from the west coast of North America and Japan and is an area where plastic accumulates. Stronger plastics can be transported over great distances and stay on the surface of the sea as they are taken by converging currents and finally accumulate in the patch. The GPGP covers an area of 1.6 million square kilometres, an area three times the size of France. When the plastics enter the gyre they don't tend to leave the area until they have been broken down into microplastics due to the effect of the waves, sun and marine life, with the concentration of microplastics continuing to increase. These small microplastics are then often mistaken for food by marine life, causing malnutrition.

The type of plastics found include:

- Fishing gear – lines, nets, ropes made from plastic
- Plastic containers such as bottles and cartons
- Foamed materials
- Plastic sheet
- Film

This amount of plastic in the ocean has environmental impacts as well as economic, including:

- Entanglement for marine life causing death
- Malnutrition for marine life as some have been found to have obtained 74% of their diets made up from ocean plastics
- Plastics entering the human food chain
- Costs resulting from government clean-ups
- Loss of tourism resulting in costs to the economy
- Negative impact and therefore costs to the fishing industry

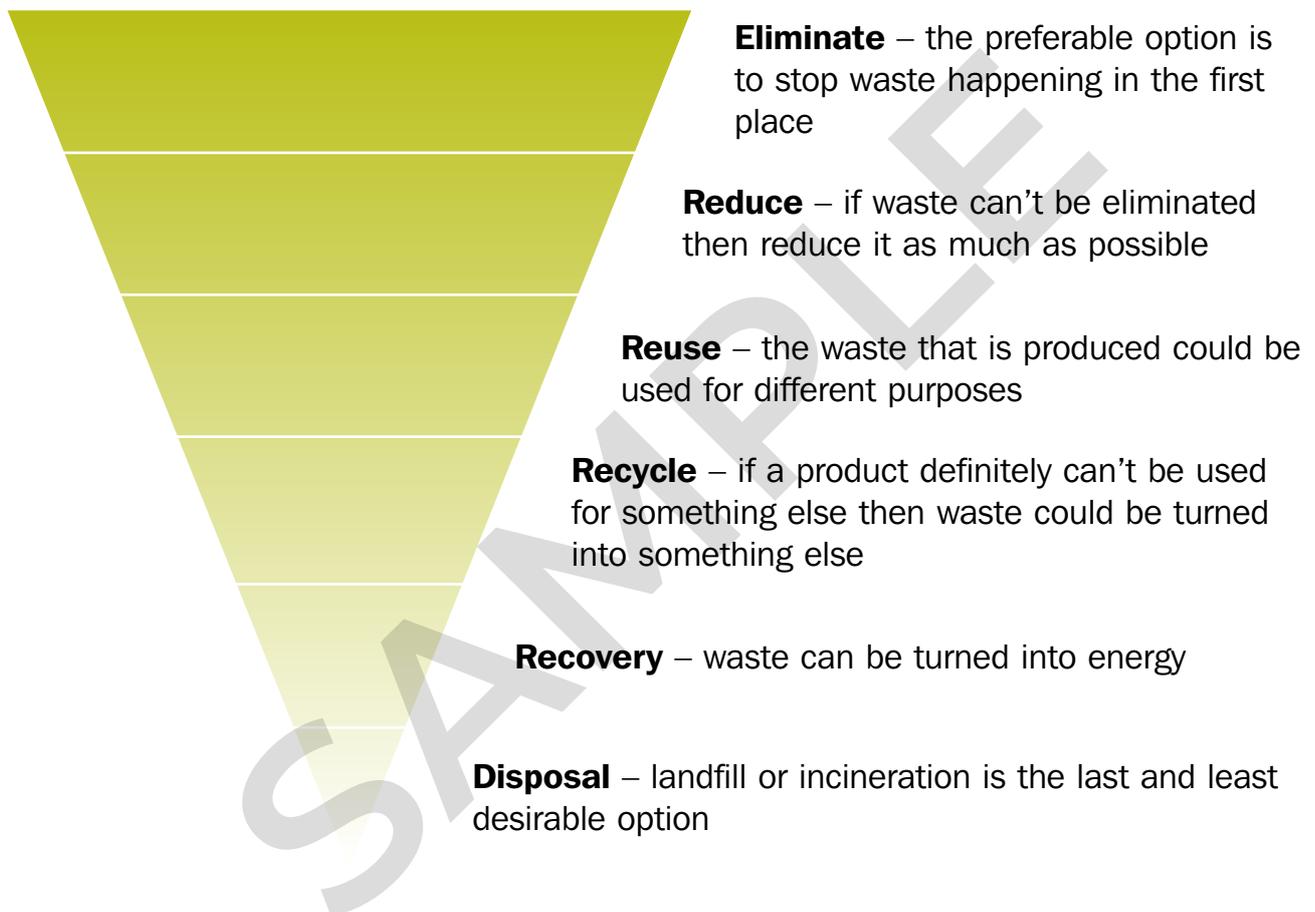
Much research has been carried out and results from testing have shown that 84% of the plastics contained at least one persistent bio-accumulative and toxic (PBT) chemical.

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The waste hierarchy

Please read the following as it will help you to answer question 4.

This is a system of ranking waste management options according to what is best for the environment and causes the least harm. The most favourable option is to prevent waste in the first place.



Study a range of packaging in your home to see which are made from recycled materials and which are recyclable.

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Hierarchy	Description	Examples
Eliminate	Prevent waste from occurring	<ul style="list-style-type: none"> ● Food products sold without packaging ● Disposal cutlery and crockery replaced with plates, cups etc. and washed ● Cancelling unwanted mail ● Use your own reusable bags to eliminate carrier bag waste ● Plan meals and menus carefully so excess food is not bought
Reduce	Cut down on the amount of waste produced	<ul style="list-style-type: none"> ● Packaging can often be reduced, for example providing refill sachets instead of a whole container, only using the size of box needed for parcels ● Reduce portion sizes for meals ● Reduce the number of printed documents
Reuse	Use an item for an alternative purpose	<ul style="list-style-type: none"> ● Items could be passed on to another user, for example charities that could make use of furniture, office equipment etc. ● Clothes could be modified, for example jeans and trousers made into shorts ● Empty containers could be used for storage or planters
Recycle	Materials are broken down and made into something else	<ul style="list-style-type: none"> ● Paper can be recycled back into paper ● Glass bottles can be recycled ● Plastics can be recycled into other items such as bags
Recover	Waste is turned into energy	<ul style="list-style-type: none"> ● Incineration – burning waste to produce electricity ● Landfill gas recovery – collecting methane gas given off from landfill ● Anaerobic digestion – microorganisms break organic waste like food to produce biogas

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Dispose	Waste either ends up in landfill or is incinerated without recovering the energy, this is undesirable and causes the most harm to the environment	<ul style="list-style-type: none">● Plastic containers● Food● Disposable cutlery and crockery● Clothing● Electrical items
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Did you know?

Sometimes the waste hierarchy is referred to as the 6 Rs – RETHINK, REFUSE, REDUCE, REUSE, RECYCLE, REPAIR

RETHINK – could you do something differently to reduce prevent waste?

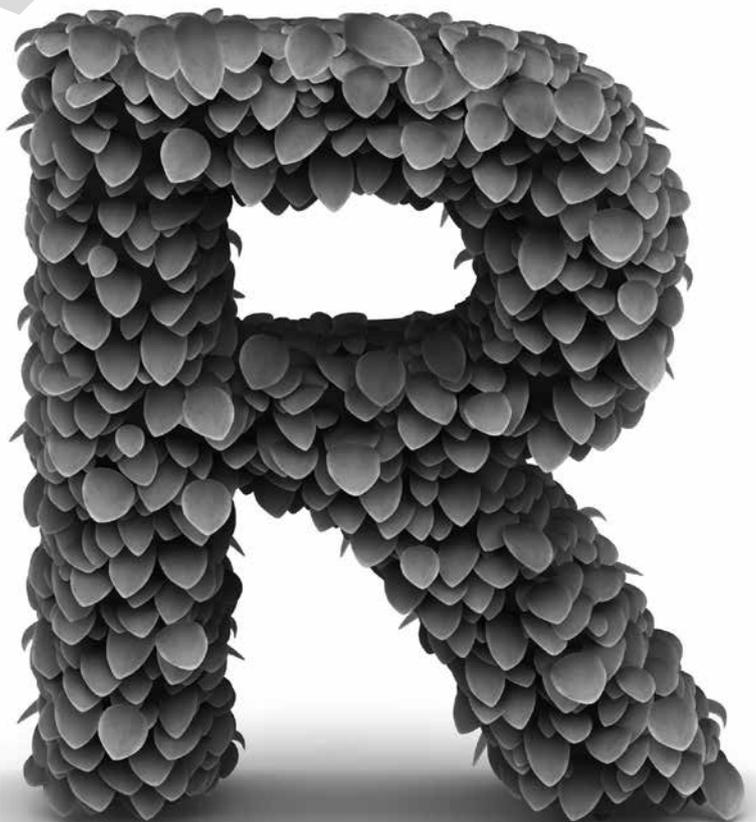
REFUSE – are there materials or resources you could refuse?

REDUCE – how could you use less of a material or resource?

REUSE – could the item have another use once it is no longer needed?

RECYLCE – are the materials recyclable?

REPAIR – can you repair the item rather than throw it away?



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Examples of the 6Rs:

RETHINK	<ul style="list-style-type: none"> ● Don't buy a new jar of coffee every time you need one, buy a refill bag and just fill up the same jar ● Buy eggs from a local supplier, taking your own egg box back each time ● Buy fruit and vegetables unpackaged
REFUSE	<ul style="list-style-type: none"> ● Take your own shopping bag wherever you go so you can refuse plastic bags ● Refuse single-use plastic straws ● Refuse single packaged items – by buying in larger packs you can reduce the amount of packaging ● Contact organisations who send you junk mail and tell them to stop, you can browse products online
REDUCE	<ul style="list-style-type: none"> ● Only print hard copies if you have to ● Print on both sides of the paper ● Only buy what you need and are going to use – plan ahead, make a shopping list and stick to it to avoid creating extra waste
REUSE	<ul style="list-style-type: none"> ● Use old jars as storage containers ● Use wastepaper as scrap for reminder notes and shopping lists ● Donate items to a charity shop, someone you know or a charitable organisation that could make use of them ● Old clothes could be kept and used for gardening or DIY jobs
RECYCLE	<ul style="list-style-type: none"> ● Paper, cardboard, plastic and glass can all be recycled either through doorstep collections or by taking them to recycling points ● Food can be recycled in compost heaps
REPAIR	<ul style="list-style-type: none"> ● With a little time and effort household furnishings and clothing can be repaired rather than throwing them out ● Could broken items be taken to a repair shop instead of automatically having a new replacement?

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Knowledge Activity 2: Think about how you could eliminate, reduce and reuse waste, either at home or in your workplace.

Eliminate	Reduce	Reuse

Types of waste classification in legislation

Please read the following as it will help you to answer question 5.

Active and inactive waste

Waste is classified by legislation. This is partly due to landfill tax as waste that is going to go in landfill must be classed as active or inactive. Inactive waste costs less to dispose of and is made up of construction and demolition waste, it is not biologically or chemically active and either will not decompose at all or will only decompose slowly. Examples of inactive waste include bricks, sand and concrete. Active waste costs more to dispose of, this is waste that decays or contaminates land and includes mixed general waste, household waste, green waste and cardboard.

Hazardous

Hazardous waste is waste that is harmful to humans and/or the environment. Examples of hazardous waste include:

- Batteries
- Solvents
- Asbestos
- Chemicals (such as print toner, brake fluid)



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- Paints
- Oils, except edible oil
- Equipment including fridges that contain ozone depleting substances
- Hazardous waste containers



Did you know?

It is illegal to mix hazardous waste with either non-hazardous or other hazardous waste.

Waste, Electronic and Electrical Equipment (WEEE)

This is end-of-life electrical and electronic equipment, it includes virtually all equipment with a battery or plug. It is divided into household WEEE or non-household WEEE. Householders have a responsibility to dispose of waste electrical items correctly; if it has a symbol with a wheelie bin crossed out it must not be put in the bin and has to be taken to a waste recycling centre.



Types of recyclable waste streams

Please read the following as it will help you to answer question 6.

A waste stream refers to the flow of waste from its source, which can be domestic or industrial, through to either recovery, recycling or final disposal.

The main types of recyclable waste stream include:

- Plastic
- Glass
- Aluminium cans
- Paper/cardboard/timber
- Scrap metal

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WASTE MANAGEMENT

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If you have any queries, feedback or need further information please contact:

Learning Curve Group

1-10 Dunelm Rise
Durham Gate
Spennymoor, DL16 6FS
info@learningcurvegroup.co.uk
www.learningcurvegroup.co.uk

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