

Topic Based Resource

Marine Litter



Background Information

Litter is waste in the wrong place. It can be found in our school grounds, in hedges, on pavements, beaches and in our parks. Litter can range from small items such as cigarette ends and chewing gum, to plastic bags, bottles and cans.

Most litter comes from people dropping it – either on purpose or by accident – although some litter comes from other sources, for example wind-blown or domestic waste spillage. The main types of litter are smoking-related, confectionery, drinks and fast food.



Litter causes significant damage to our wildlife and environment, the effects of which are often long-lasting and extend far beyond where the problem originates. Threats to wildlife from litter include animals becoming trapped, which can lead to starvation, mistaking litter for food, injury and food poisoning.

Marine litter

Our ocean makes up three-quarters of our planet. No matter where we live, we all depend on our ocean for the food we eat and the air we breathe.

Marine litter is human-created waste that has deliberately or accidentally been released into a waterway, lake, sea or ocean. A large proportion of litter from land ends up as marine litter through rain, flash flooding or sewage systems. Litter is left on our beaches, blown into our oceans, washed down our street drains and flushed down our toilets. It has been estimated that around **80%** of marine debris is from land-based sources and the remaining **20%** is from ocean-based sources.

Year after year, plastic makes up most of the debris found on our beaches, both in the UK and in many other countries around the world. In the Southern Hemisphere, half the debris found on remote island beaches can be made of plastic and there are five huge rubbish dumps, amounting to twice the size of the USA floating in the

Pacific and Atlantic Oceans. As much as 85% of catalogued marine litter is made up of plastic and polystyrene.

According to Sky Ocean Rescue: *"Every minute, the equivalent of a rubbish truck load of plastic goes into our oceans. It never decomposes and will remain there forever. If nothing changes, by 2050 all the plastic in the ocean could weigh more than all the fish. Plastic impacts on the entire ecosystem, marine life get caught up in it, eat it and live in it. It also has a direct impact on our health, acting as a sponge for toxins which can end up in our food chain."*

There are some great initiatives for removing litter from our waters, however the scale of the problem is such that extraction can only be a part of the solution and land-based waste needs to be addressed from manufacture to distribution and disposal to stop it becoming marine litter.

Microplastics

The term 'microplastics' is used to refer to pieces of plastic that are smaller than five millimetres in size. Microplastics are highly toxic, and do not go away. Sadly, they are often mistaken for prey by many marine animals and seabirds, eventually entering our food chain.

Microplastics can come from a variety of sources: Primary microplastics are deliberately made as small beads, pellets or plastic fragments. Many of the manufactured microplastics (e.g. polyethylene 'microbeads') are ingredients in some toothpastes, facial scrubs and body washes, as well as makeup products, deodorants and other personal care products. Others are pellets (often called nurdles), which is the form in which raw plastic is transported to plastic manufacturers.

Secondary microplastics result from the breakdown of larger pieces of plastic by physical and chemical forces. Others come from synthetic fabrics like polyester, as every time a piece of polyester clothing is washed hundreds of fibres are released into the water.

The UK government has announced a ban on microbeads that are used in 'rinse-off' products. However, there are many products not contained within the scope of this ban that contain microplastic ingredients and enter the aquatic environment.



Climate Perspective



Litter and waste must be managed correctly as this can have an impact in reducing greenhouse gas emissions. Both carbon dioxide and methane are greenhouse gases, which contribute to global warming and climate change.

Rubbish sent to a landfill represents a significant amount of greenhouse gases already emitted to the atmosphere and have contributed to climate change.

It is important to remember nearly all plastic is made from fossil fuels. Sunlight and heat can cause plastic to release powerful greenhouse gases. As our climate changes, the planet gets hotter, the plastic breaks down into more methane and ethylene, increasing the rate of climate change, and so perpetuating the cycle.

Marine Litter

What's the big deal?



Aimed at Upper KS2

Global Goals:

12– Responsible Consumption and Pollution

13 – Climate Change

14 – Life Below Water

Aim – To raise awareness of issues surrounding marine litter and encourage participants that they can make a positive difference.

Objectives:

- To explore the common types of litter that end up in the ocean.
- To understand how litter dropped on the land ends up in the ocean.
- To develop an understanding of the impact litter has on the marine habitat.
- To generate Eco-actions to make a positive difference to the litter situation in their school and local community.

Resources:

- Desk top computers/Laptops/I-Pads
- Paper/Pens
- Video clip – <https://www.bbc.co.uk/newsround/42810179>
- Infographics – <https://cleancoasts.org/marine-litter>

Activity Background Information:

It is estimated that 80% of the litter found in the ocean comes from land-based sources. Many single use items are made from plastic and end up as litter. 8 million pieces of plastic are entering our oceans daily and it is thought that this contributes to the death of 100,000 marine mammals and turtles and 1 million sea birds!

This activity explores how litter ends up in the oceans and encourages participants to make a positive change to help tackle the issue of marine litter.



Activity:

1. Introduce the issue of marine litter to pupils highlighting the above background information – particularly the statistics.
2. Put the pupils in groups of 4/5. Introduce a mind mapping exercise asking them to predict what the most common types of litter in the ocean are? And to create the top 10 list of how litter dropped on the land ends up in the ocean. Share thoughts.
3. Show the following short clip from Newsround which highlights key marine litter messages – <https://www.bbc.co.uk/newsround/42810179>
4. Follow this with exploring the following infographic highlighting the ways litter makes it's way to the ocean – <https://cleancoasts.org/marine-litter>. Check this list with their 10 ten predictions. Discuss the outcomes, were there any surprises?
5. Set the class challenge – 'How do we make a difference'? The conversations should include 'How do they feel about the issue'? How can they raise awareness of the issue'? The final outcome will be the creation of individual/group/class/school actions that can be implemented to make a difference.



Extension Ideas:

Explore the plight of a specific marine animal – turtles, seals, albatross etc and create a power point presentation to highlight the issues to share with their peers.

Produce an assembly highlighting the class findings relating to marine litter. Use this as a platform to introduce and inspire participation in the whole school action.

Encourage the class to become engineers of the future. Invent and produce a design for a machine that is capable of cleaning the ocean of all the litter.

Curriculum Links

Purposes:

- Ethical, informed citizens of Wales and the world.

AOLE's:

- Humanities

What matters statements:

- Informed, self-aware citizens engage with the challenges and opportunities that face humanity and are able to take considered and ethical action.
- Our natural world is diverse and dynamic, influenced by processes and human actions.

AOLE's

- Science and Technology

What matters statements:

- The world around us is full of living things which depend on each other for survival.



cadwch keep
gymru'n wales
daclus tidy

33-35 Heol yr Eglwys Gadeiriol, Caerdydd, CF11 9HB | 33-35 Cathedral Rd, Cardiff, CF11 9HB
029 2025 6767 keepwalestidy.cymru info@keepwalestidy.cymru

Cadwch Gymru'n Daclus yn gwmni wedi ei gyfyngu trwy warant. Rhif Cwmni: 4011164 Rhif Elusen: 1082058 Rhif TAW: 850 3958 13
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