

Waste Breakdown

Teacher Notes

Primary (3-6)

ACTIVITY DESCRIPTION

The Waste Breakdown activity raises awareness of the time required for waste materials to break down and how this can take many years, especially in landfill where air, water and light are scarce. Students will look at different types of waste and are asked to associate the correct timeframe for it to break down in landfill. Students are then able to brainstorm some solutions and alternatives based on the 5Rs: Rethink, Refuse, Reduce, Reuse and Recycle.

INSTRUCTIONS

1. Brainstorm

Spend a few moments brainstorming the waste items that we commonly dispose of into landfill.

2. Put the timeline together

What happens once these items are in landfill? Look at the cards you've been given of various waste materials. Allocate each object to the correct time frame you think it would take for the item to break down in landfill.

3. Discussion

1. Refer to the list of objects below and categorise each according to whether they are biodegradable or non-biodegradable (Place a **B** next to the biodegradable objects and an **NB** next to the non-biodegradable objects).

- Plastic bottle
- Woollen socks
- Aluminium can
- Plastic coated paper
- Orange peel
- Plastic bag
- Timber
- Piece of paper

2. Which two categories are the fastest to break down? Provide one possible reason for why this is the case.

3. Choose one of the following objects and suggest ways we could Rethink, Refuse, Reduce, Reuse or Recycle this object:

- Plastic bags
- Aluminium can
- Plastic bottle

SUGGESTIONS FOR ASSESSMENT

Formative

1. Participation in the Waste Breakdown activity
2. Participation in the Discussion questions above

BACKGROUND NOTES

Many materials that end up in landfill break down at a very slow rate. This is a significant problem that is compounded by the rapid rate of consumption and disposal of items in our society.

Many materials that end up as waste in landfill contain **toxic substances** that become environmental hazards. For example, according to Environment Victoria, electronic waste items may contain mercury, arsenic, cadmium, PVC, solvents, acid and lead. **Leachate** is the liquid formed when waste breaks down in landfill and water filters through that waste. It can pollute the land, ground water and water ways.

Another significant problem with landfill is organic waste. When organic materials such as food scraps and green garden waste are put in landfill, it is generally compacted and covered. This removes oxygen and causes it to break down in an anaerobic process, thus releasing **methane**, a greenhouse gas that is 22 times more potent than carbon dioxide. This has significant implications for global warming and climate change, as 40% of our landfill waste is organic.

ACTIVITY SOLUTIONS

Waste item	Approximate biodegradability of objects in landfill
Piece of paper	2 - 6 months
Orange peel	1 - 5 years
Timber	
Woollen socks	
Plastic coated paper	5 - 7 years
Plastic bags	20 - 100 years
Aluminium can	80 - 100 years
Plastic bottle	Up to 10,000 years

ACCESS THIS ACTIVITY

Visit the **CERES School of Nature and Climate website** to download the activity - <https://sustainability.ceres.org.au/education-resources/curriculum-activities/>

Curriculum and RSS Links

KEY CONCEPTS

Landfill, Food Waste, Plastics, Biodegradability, 5Rs (Refuse, Rethink, Reduce, Reuse, Recycle)

KEY LEARNING INTENTIONS

1. Understand how long items remain in landfill
2. Raise awareness of the rate of waste material breakdown
3. Build an understanding of the differences between biodegradable and non-biodegradable items

VICTORIAN CURRICULUM

Science

<p>3 - 4</p> <p>Science knowledge helps people to understand the effects of their actions (VCSSU056)</p> <p>Natural and processed materials have a range of physical properties; these properties can influence their use (VCSSU060)</p>	<p>5 - 6</p> <p>Changes to materials can be reversible, including melting, freezing, evaporating, or irreversible, including burning and rusting (VCSSU077)</p>
--	---

Design & Technologies

<p>3 - 4</p> <p>Investigate the suitability of materials, systems, components, tools and equipment for a range of purposes (VCDSTC027)</p>	<p>5 - 6</p> <p>Investigate characteristics and properties of a range of materials, systems, components, tools and equipment and evaluate the impact of their use (VCDSTC037)</p>
--	---

SUGGESTED RESOURCESMART SCHOOLS MODULE LINKS



Undertaking the activity as described above links to the *ResourceSmart Schools Waste Module - actions B1.2, B1.3*

Below is a list of extension activities that link to additional actions of the Waste module:

1. Students undertake a litter survey of the school grounds and estimate how long it will take for each piece of litter to break down in the environment (*ResourceSmart Schools Waste Module - actions A1.2, B1.3*)
2. Students undertake a general waste bin audit and create recommendations based on contamination and opportunities to minimise waste to landfill (*ResourceSmart Schools Waste Module - actions A1.1,*

SUGGESTED RESOURCESMART SCHOOLS MODULE LINKS (Cont'd)

B1.3, C2.1)

3. Students run a Nude Food lunch day at school to raise awareness around packaging and waste. Follow up with a whole school community survey to investigate opportunities to hold these on an ongoing basis (*ResourceSmart Schools Waste Module - actions A3.1, A3.2, B1.4, C1.2, C2.1*)
4. Invite local indigenous group/s to share their perspectives on waste and traditional uses of resources within an ecosystem (*ResourceSmart Schools Waste Module - actions B1.5, B1.6*)
5. Students write a learning story about key findings of the activity and share in your school's newsletter and website, including recommendations for waste minimisation at school and at home (*ResourceSmart Schools Waste Module - actions C1.1, C1.3, C3.5*)
6. Students undertake the [Plastic Free July](#) challenge to eliminate as much plastic from their lives at both school and at home, learning new skills to create their own products where possible (e.g. toothpaste, cleaning products, etc.). Include ideas and tips in the school newsletter throughout the month of the challenge (*ResourceSmart Schools Waste Module - actions C3.3, C1.1, C1.3*)
7. Run a drive at the school to collect materials for social support and/or charity. Items could include clothing, used furniture, bikes, toys and other goods (*ResourceSmart Schools Waste Module - actions A6.3, C1.1, C3.3*)
8. Start a phone drive or collection bin for electronic waste materials at the school. You can partake in projects such as [Melbourne Zoo's campaign 'They're Calling on You'](#) (*ResourceSmart Schools Waste Module - actions C3.3, A6.3*)

Speak to your CERES ResourceSmart Schools Facilitator about further links to the Waste Module.