

# UNIT 2: WASTE



## VOCABULARY

Biodegradable	Cardboard
Consumer	Compost heap
Food scraps	Garden waste
Glass	Incinerator
Integrated Waste Management	Kerbside collection
Landfills	Left overs
Newspapers	Packaging
Recyclable	Resource recovery
Reuse	Rubbish
Wheelie Bin	

## BACKGROUND

WASTE is any solid or liquid material that is discarded, unwanted or “thrown away”. Waste is referred to by a number of different names such as rubbish, trash, junk, refuse and garbage. Humans have always produced some sort of waste. Each person in New Zealand produces an estimated 2.5 kg of waste each day!

Up until forty years ago, waste was not a significant problem. Our great great grandparents maximised the life of everything they used from food to clothing to wood. Frugal use of resources was necessary since goods were difficult to manufacture and transport. Such efficient resource use created very little waste.

Since then, great advances and improvements have been made in manufacturing, so goods became more readily available and affordable. Inexpensive disposable products were developed to replace old durable goods. This trend towards a consumer society has created a number of conveniences as well as problems, namely an enormous amount of waste, which has to be disposed of. Our waste problems have also intensified with the continual increase in the world population.

As the availability of natural resources and landfill space dwindles, society must change the way it deals with waste. More efficient and environmentally sensible ways of handling waste such as reduction, reuse, recycling and composting will help to sustain our resources and our planet.

# WASTE

## Materials students may bring from home

bag of household rubbish  
clothing  
toys  
2 cardboard boxes  
old magazines  
paper  
crayons or pens  
samples of clean rubbish  
scissors

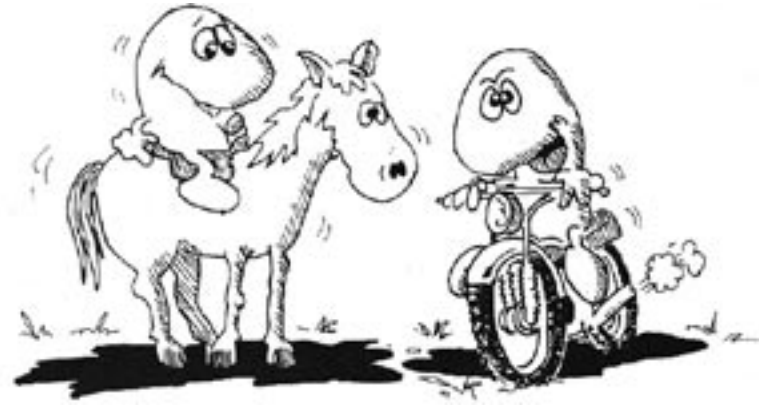
5 days worth of classroom rubbish  
plastic gloves  
small weighing scale  
construction or graph paper  
old magazines or newspapers



# ONCE UPON A TIME Waste Then And Now

## KEY CONCEPT

Waste generation has increased since our Great Great Grandparent's Day.



## LEARNING OBJECTIVES

Students will begin to understand that our society has experienced cultural changes, which affect the use of natural resources and the production of waste.

item into the container they chose, e.g. technology changes – plastic.

2. Discuss alternatives that GGM may have had to have a drink from. This can be taken further back in time through the ages to Pre-historic Man. Chart the result on a timeline.
3. Compare the benefits and problems of waste then and now.
4. Using Worksheet 10, students make a comparative study of everyday items used now and in 1900.

## MATERIALS

- Bag of household rubbish, toys, old clothes, etc. (related to food, clothing, appliances, etc.)
- Two empty containers labelled "ours" and "Great Great Grandmother's"
- Worksheet 10, "Once Upon A Time..."

## BACKGROUND INFORMATION

Not only has the population put pressure on the earth's resources, our standard of living and our sophisticated technologies have also taken their toll on resources, particularly non-renewable resources. As well, we are producing vast amounts of waste, which are seriously harming our planet.

## EXTRA ACTIVITIES

### 1. More Rubbish Today?

Do you think we produce more rubbish today than when your Great Great Grandmother was young? Add to the chart the students' answers to the GGM survey.

### 2. Oral History

Talk to an older person that you know. What waste did they have when they were young? What happened to their household/farm/shop waste? Was it burned? Buried? What things do we have now (e.g. plastics, aluminium cans, milk cartons...) that they did not have in "olden days"? Write a story, article for a magazine or newspaper, record on tape. Preserve for the future your glimpses of the past!

## LEARNING STEPS

1. Just as Great Great Grandmother's housing and transportation differed from ours, so too did her rubbish. Students choose an item from the rubbish bag and decide whether it belongs in the "Ours" bin or the "Great Great Grandmother's" bin. Students explain why they put the

### 3. Community of the Future

Our present towns and cities have a variety of services: power, telephone, water, gas, sewage, which are delivered or collected through a variety of pipes and wires. But what about waste collection and recycling? How can this be built into town planning and community structure? Draw a map or aerial view of what our communities could look like in the future.

### 4. Then and Now Video

Discuss, plan and make a short class video (or different groups each take a separate aspect) showing the differences and similarities between waste "then" (20 years ago or more) and "now". Set up a video loan scheme so that students involved can take the video home to show family and friends.

### 5. Cultural Differences

Investigate and make comparisons of different cultures and the communities within them with respect to waste generation. For example, comparing a modern industrial city and a rural village or community in a third world country.

### 6. Co-operation or Conflict

In our community we produce, distribute and use a tremendous range of goods and services. What are the by-products of this manufacturing, trade and commerce? Where and why is waste generated? Where can we see possible sources of conflict in the different community demands and expectations? How can co-operation and better use of resources overcome these problems? Where does the responsibility for action lie? What information do we need to address this problem? How will we judge our solution? How, when and where should our plan of action be put into effect? A range of leads here for a social studies problem-solving approach to community issues relating to waste and its effective management.

### 7. Vocabulary

Waste, resource, infinite, renewable, consume, conserve... Start a class dictionary or wall list of waste management terms and abbreviations. Can we get 100 words? Easily!

# WORKSHEET 10

## Once Upon A Time

**1900**

**Today**

Clothing	cloth from natural fibres hand spinning, weaving and knitting	clothes made in factories man-made fibres
Transport	animals, foot, boat, wagon trains	automobile, airplane, bus train (fuelled by wood, coal or oil)
Food	home grown and preserved scraps fed to animals	large supermarkets frozen and convenience foods excessive packaging
Toys	homemade and simple	factory made, plastic
Homes	candles, oil lamps, little electricity home repairs of damaged goods	many electrical appliances buy new instead of repair

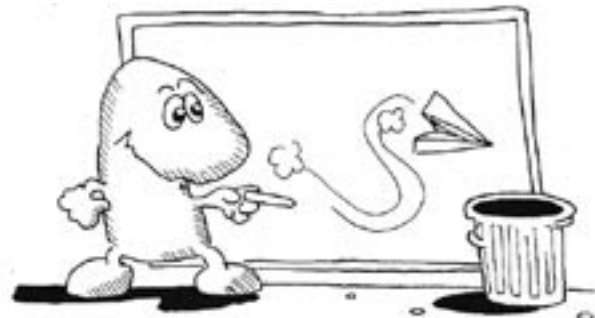


# WASTE AT SCHOOL

## What is it? Where does it go?

### KEY CONCEPT

Where does school waste come from and where does it go? Who takes care of waste at school?



### LEARNING OBJECTIVES

Students will learn what waste is and what happens to it. Students will understand how waste is handled, collected and disposed of at school and their home.

2. Invite the school caretaker or your local rubbish collector to the class to talk about what waste is, how it is collected and handled, and where it is taken from the school. Prepare questions in advance such as:

What is our school's waste made of?  
Where is rubbish collected at school?  
How often is it collected?  
How much does the school throw away each week? year?  
How much is incinerated?  
Where is rubbish taken? What happens to it?

### MATERIALS

- Old magazines
- Scissors
- Paper
- Crayons or pens
- A few samples of pre-sorted rubbish

3. Students can cut out pictures from magazines or draw pictures of things that could be thrown out when they are used up or no longer needed. Create a montage/collage that tells the story of waste and where it goes, what happens to it when it leaves the school.

### BACKGROUND INFORMATION

Waste is any human-made or natural material that is discarded. Waste is created from the use of materials in activities such as eating, cleaning, recreation, etc.

### EXTRA ACTIVITIES

### LEARNING STEPS

1. Before starting the activities review these questions:

What is waste?  
Who knows what waste is?  
What are some other names we have for waste? (such as garbage, trash, junk, rubbish)  
Where do we put our classroom waste?  
Who empties the class rubbish bin?  
Where does it go?

#### 1. Waste in Our Community

Investigate (survey, observations, interviews, questionnaire) how waste is produced in the kitchen, in the home, workshop, garden, bathroom, local offices and factories, schools and hospitals. Where does waste come from? Why? What kinds of waste do these activities produce? What happens to this waste? Could it be recycled? Did it have to be created in the first place?

## 2. Waste in other Communities

What happens to waste in other countries? In other cultures? Japan, the United States, United Kingdom, Germany, Australia, Africa, South America, India? Undertake class research of magazines, newspapers, television documentaries, encyclopedias, etc. Obtain material (one letter per school) from embassies or write to schools in other countries being studied. Why not send some of your project material with a request for some of theirs?

## 3. Get Lyrical!

Use waste, waste reduction, recycling, composting, etc. to inspire students to be creative and lyrical! Write poems (in different forms and shapes), limericks, songs, rhymes, and more! Include these in your class anthology of waste items.

## 4. A Waste Library

Develop a section of your class library on recycling and waste management. Include books, scrap books, information pamphlets, council and environmental group leaflets, magazines and work produced by students – stories, booklets, poster, etc. All this is to provide a stimulus, support, ideas, background information, local examples, references and a strong focal point in your classroom.

## 5. A Sense of Waste

Devise a “waste walk” around or near the school that provides experiences involving a range of senses. ENEF: eyes, nose, ears, fingers – the basis of good science and keen observation. The “waste walk” should include observing texture (rough, smooth, slippery) appearance (dull, shiny), smell (rotten, foul, fragrant), and sound (pitch, rhythm, silence). Have students use these sensory experiences to write a short story or poem.

## 6. Waste Board Games

Design and make waste board games for students to play. A snakes and ladders format with good and bad waste practices, a rubbish trail (forgot to separate rubbish, miss two turns) or other games. Good for wet lunch days!

## 7. Does Your School have a Sound System?

Why not use it for your class to broadcast waste slogans, messages, short stories, poems, limericks, songs, announcements, etc. All of course directed towards a tidy and waste conscious school! Encourage every school to take part, contribute items, take part in competitions, talent quests, etc. If your school does not have a sound system, why not hold a regular assembly spot – say every Thursday morning? Contact local radio stations...will they air your messages?

## 8. Crosswords

Waste, resources, renewable, non-renewable, consume, conserve... Play with words – build up sets of words (we’ve given you a start here) relating to different aspects of waste and waste management. Now get groups to make up a crossword, scrambled words, word-finder, matching pairs, etc. The tricky part is making up the clues! Include the best efforts in your school newsletter or end-of-year magazine. Perhaps you could promote your own class newspaper or monthly bulletin?

## 9. Stories

Plenty of scope here for all sorts of creative writing and imaginative tales! Try topics such as:

A day in the life of an aluminium can...

I was a plastic milk container...

Conversation with a rubbish bin...

The day my \_\_\_ was thrown in the rubbish...

The world of waste in the year 2100...



# RUBBISH BIN CHECK

## KEY CONCEPT

Rubbish can be sorted, to analyse the types of materials we throw away.

## LEARNING OBJECTIVE

Students will understand what rubbish is made of and that it can vary in composition over time or by location of collection.

## MATERIALS

- Worksheet 11 "Household Waste"
- 5 days worth of classroom rubbish
- Plastic gloves for each student
- Small scale for weighing rubbish
- Construction or graph paper
- Old magazines and/or newspapers

## BACKGROUND INFORMATION

Waste is any solid, liquid or gaseous matter, which is discharged, unwanted or discarded by the current generator or owner and includes materials that could be reused, recycled or recovered.

## LEARNING STEPS

What kinds of things do we throw away? What are they made of? Find out what materials they think makes up most rubbish.

1. Photocopy Worksheet 11. Discuss the different categories of waste ( paper, food scraps, plastic, etc.) and list examples of items in each category. Students can create rubbish category posters or collages using these lists and drawings or pictures from magazines and newspapers.

2. Collect all rubbish discarded by the class for several days. Pre-sort the rubbish, removing any sharp or harmful objects. Lay a sheet on the floor, dump the rubbish on it, and have students sort it (using the plastic gloves) according to category, i.e. paper, metal, plastic. For items that can fit into more than one category decide which one is more predominant. If many items are equally mixed you might want to create a mixed materials category. Working in groups weigh a category of rubbish, graph.
3. Create a bar chart bulletin board display that compares the various components of the classroom waste stream by type and weight.
4. Activity can be repeated for seasonal/daily/weekly changes.

Important Note:

Check to make sure students handle waste carefully, using the gloves at all times. You may want to sort through the rubbish prior to the activity to check for any sharp or harmful materials.

## EXTRA ACTIVITIES

### 1. The Life of Rubbish

Tell the story of the life of a piece of rubbish. Where did it come from? What use did it have? Where does it go from when we've finished using it?

### 2. Rubbish Collage

Look through old magazines and find pictures of things that get thrown away in the rubbish bin. Students can create a collage poster from these pictures.

### 3. Conduct a Survey

Develop with your class a survey to investigate an aspect of waste management. The survey could be carried out by your students with other

classes in the school or with family, friends or close neighbours. (Encourage students not to go from door-to-door.) Set a reasonable limit of five surveys per student and keep the list of questions short so that they can use the telephone to ring relatives and family friends.

Results could be graphed in maths books or as part of a wall display. A comprehensive survey could form the basis of an item in your local newspaper.

Possible questions for such a survey include:

- a) Items commonly thrown away in rubbish bags or bins.
- b) Do you have a compost bin at home?
- c) Do you know where your nearest recycling drop off facility is?
- d) Do you buy recycled or recyclable products at the supermarket?
- e) Do you reused jars and plastic containers?

#### 4. A Waste Trail

The reverse of a school nature trail perhaps? Design a waste trail for a junior class (or with more sophisticated clues and comments for an intermediate class) taking them around the school environs to such places as the classroom wastepaper bin, lunch scraps, incinerator, compost bin, recycling bin, bottle bank, can depot (if your school has these,) street litter bin, littered areas, paper recycling bin, kitchen or school canteen. Try this theme: what is our school doing about waste?

#### 5. Rubbish Analysis

Investigate and analyse (decide major groups and number/amount of each) a bag full of household rubbish to see what is commonly thrown out. You may be able to compare homes with different disposal systems – bags, bins, weekly/monthly collection...ring a school in another town!) Graph your results. Use this as a springboard into other activities, for example follow a

product such as cereal packet, yoghurt pot or newspaper before and after it is used. Combine reports into a resource booklet for the class or school library.

#### 7. Word Associations

Brainstorm a 'word web' with key concept such as 'waste' in the centre. Different strands of the web will develop ideas through such associations as waste – containers; cans – steel; aluminium – melt, etc.



# WORKSHEET 11

## Household Waste

