SIMS RECYCLING SOLUTIONS

CERES COMMUNITY ENVIRONMENT PARK

CREATING A NEW WAY OF BEING
Centre for Education & Research in Environmental Strategies

CECV catholic education commission of victoria ltd

E-WASTE AT HOME

CERES Take home activity

Code to symbols

Information

Activities to do in book

Things to do at home

Inside this issue:

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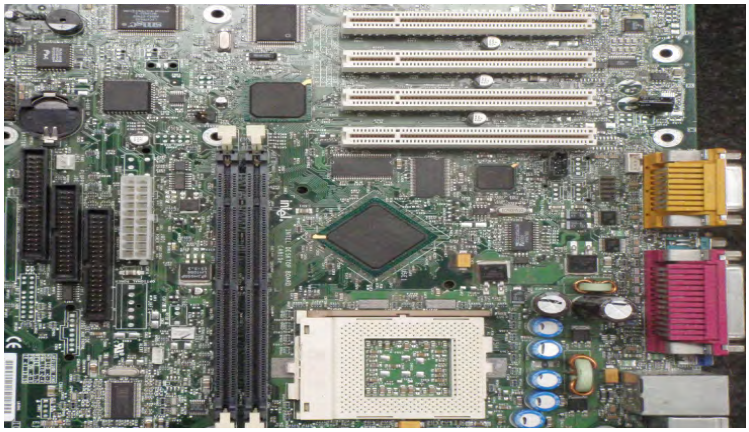
What is E- Waste?

Have you ever wondered what happens to all your old, broken, out of date, computers, MP3 players, televisions and mobile phones when you throw them away? Well they may become toxic ... **e-waste** or 'electronic waste."

If not treated properly, e-waste is extremely toxic to humans, plants, and animals. It can poison water, air and soil.

The amount of **e -waste** produced worldwide has skyrocketed. Almost 50 million tonnes are thrown away every year. It is hard to imagine such a huge amount. If all the **e-waste** produced every year was put into containers on a train, the train would go once around the world!



Computers contain many metals and chemicals which are dangerous to our health and the environment

E-waste is the fastest growing type of waste in your council's waste collections. This is because people are upgrading their mobile phones, computers, televisions, audio equipment and printers faster than ever before.

E-waste is produced all over the world. Asia produces around 12 million tonnes each year. As well as this, a lot of the world's **e-waste** is shipped to India, China and other Asian countries to be processed in unsafe ways and with dangerous conditions for workers. Workers separating components for recycling get paid only $1.50 per hour. They sometimes work 16 hours a day, 7 days a week, getting sick from the toxic chemicals at the same time.

E-waste Life Cycle

Draw a diagram showing the life- cycle of a computer, mobile phone or TV.

A 'life cycle' shows where the parts come from, how they are made, where they go next…

For more info watch *The Story of Electronics* at
http://storyofstuff.org/film.php

Which parts of a computer can be re-used or recycled?

Circle the parts of the computer which can be re-cycled or re-used and write how this could be done.

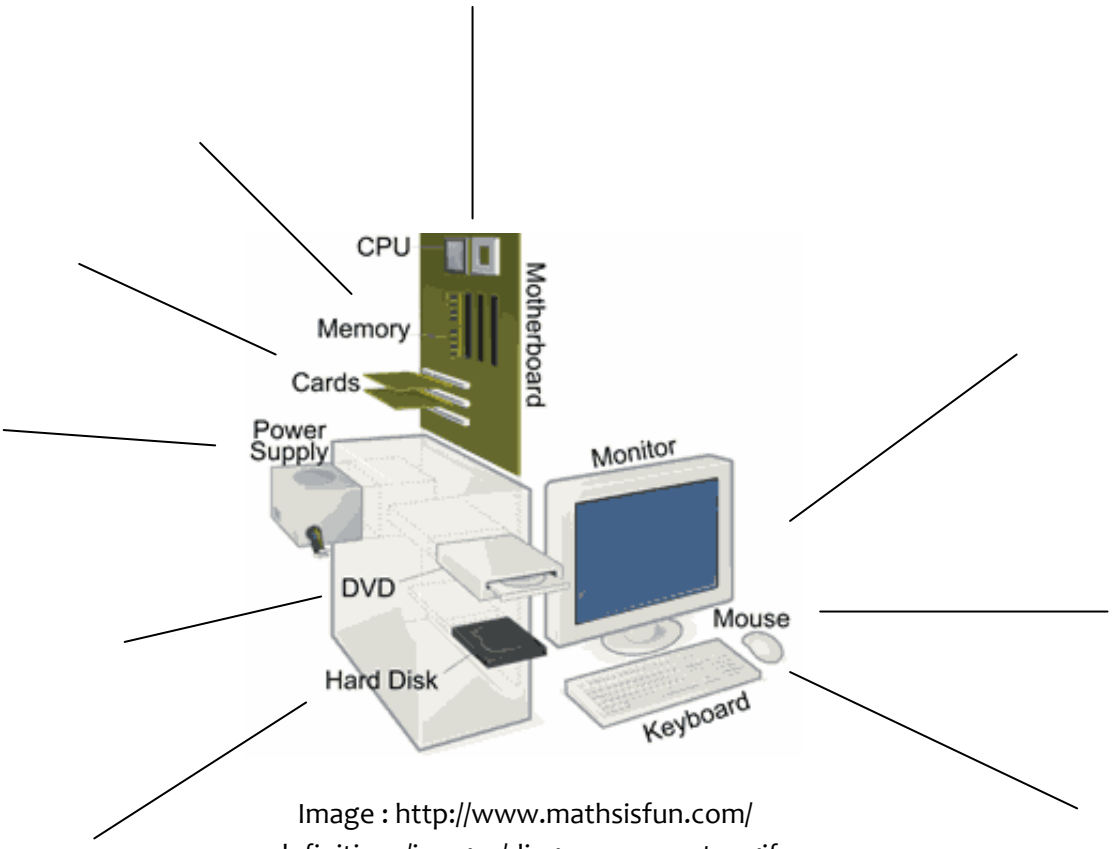


Image : http://www.mathsisfun.com/definitions/images/diagram-computer.gif

More hints on how e-waste is recycled at

http://www.youtube.com/watch?v=263VmohNevY

http://www.youtube.com/watch?v=uSvfun8FC-c&NR=1

Computers to Landfill?

Many computers from just a year or two ago are regarded as "obsolete" junk. They may still work, but we think they are no good; perhaps they do not have enough memory, they are too slow, taking five minutes to load up your favourite website or do not have the latest applications... This is referred to as "perceived obsolescence" because we could upgrade the devices to make them work and they still do what they were made to do.

New Computers?

How often do you and your family buy new computers?

_____

Why do you update your computers?

_____

_____

_____

What are the alternatives to buying new ones?

_____

When you decide to get rid of you old computer what do you do with it?

Give Your Computer A Second Life

- ✓ Repair
- ✓ Add more memory
- ✓ Replace processor
- ✓ Computer swap http://technologymarkets.com.au/
- ✓ Send your old computer to overseas schools that could use them or
- ✓ Send to Computerbank for re-use by disadvantaged people http://www.computerbank.org.au/

Computer Recycling

HOW?

- ✓ Check company websites and if possible send your old computer back to manufacturer
- ✓ Take your computer to a nearby ***recycling*** centre like Byteback www.bytebackaustralia.com.au/
- ✓ Contact your local council—they often collect e-waste if you ask
- ✓

WHY?

- ✓ Reduce waste going to landfill
- ✓ Stops release of toxins, and metals from e-waste into natural environments
- ✓ Reduce health effects from the released toxins
- ✓ Reduce energy used in mining of metals and construction of devices
- ✓ Reduce chemical processing of components (such as polymers or 'plastics') for electronic devices

Computer Recycling by Companies

How good is your company at recycling their computers?
Search their website/s.
How clear is the information? Can you find it?

_____

How serious about recycling do you think they are?

_____

Give the companies a score and give a suggestion of how they could improve.

_____

This website may help you to score different companies:
www.greenpeace.org/international/en/news/features/green-electronics-guide-ewaste250806/

Resources in E-waste

Each year, around the world, making mobile phones and personal computers uses:

- 3 per cent of the gold and silver mined
- 13 per cent of the palladium mined and
- 15 per cent of cobalt mined

(United Nations Environment Programme (UNEP), 2009, FROM E-WASTE TO RESOURCES.)

Mobile Phones as E-waste

It is estimated that 25.99 million mobile phones are in use in Australia (ACMA, 2010). 14 to 16 million old, broken and unused phones are being stored in homes and offices. If these phones were recycled, "the materials recovered could produce 3.2 million aluminium cans, 160,000 plastic fence posts, and save enough greenhouse gases to take 5,180 cars permanently off the road," says Rose Read (AMTA).

Gold & silver can be recycled into jewellery and other electronic devices.

Over 90% of the materials in mobile phones can be recycled.

Source: Rose Read, Manager Recycling, Australian Mobile Telecommunications Association (AMTA) (MobileMuster, 2010, http://www.mobilemuster.com.au).

Mobile Phone Hunt

Count how many mobile phones you or your family have ever had.

_____

How often does your family buy a new phone?

_____

Have you or a family member ever had a phone for the payback period (7 years)?

_____

Discuss & write down how you could reduce the impact your phones have on the environment.

_____

_____

_____

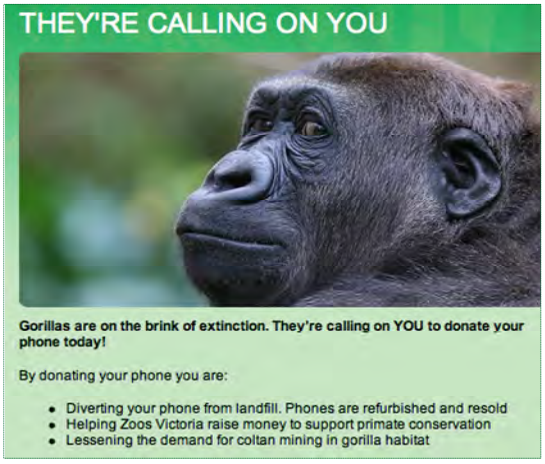
Environmental Payback

The ***payback*** period is when the usefulness of a product has balanced the environmental impact—we have got the most use of the materials. The payback period for a mobile phone is 7 years (UNIVAR, 2011, http://www.univareurope.com).

Manufacturers rarely make phones to last this long. If you can use your mobile phone for 7 years or more, it will be better for the environment.

Most Australians get a new phone every 18-24 months (ACMA, 2010). Challenge yourself to make your phone last 7 years.

Reducing Mobile Phone Impacts



Recycling phones can save the lives of dozens of gorillas each year by funding rangers and reducing the need to mine *coltan* in their habitat.
Donate at
http://www.zoo.org.au/Calling_on_You

Batteries and Cells

A battery or a group of cells store chemical energy. They are made in many different shapes and sizes and can be found in almost every device we own, in our mobile phones, alarm clocks, laptop computers, watches, torches and even hybrid cars.

Rechargeable & Non-Rechargeable

Just when you need that torch to find something lost under your bed, the battery might run out. If they are ***non-rechargeable***, they have run out and will need to be replaced. Unfortunately, batteries have many metals and toxins in them, which can be released into the environment if not recycled properly.

If you had ***rechargeable*** batteries in your torch (like a MP3 player) you could recharge them by running an electric current through them; by connecting to a battery charger or solar charger.


Wind up radio


Solar power torch


Solar phone charger

Batteries in Your Devices

So many of the gadgets that we use need batteries. It is hard to think of what people did without batteries... What are the environmental impacts of batteries?

_____

_____

_____

What gadgets that you use might be able to use rechargeable batteries? How can you tell?

_____

_____

_____

_____

Are there any other power sources for electronic devices? E.g. wind up radios

_____

_____

_____

_____

More information about batteries can be found at

http://www.sita.com.au/media/22609/batteries.pdf

How Long Can Electronic Devices Last?

Think of the electronic devices you use and have used and still keep. Complete this table and work out the amount of future e-waste in your home.

Product	Number Used	Number Stored	How many years did you use them for?	How many years do they usually work?
PC & monitor				5-8
Laptop				5-8
Printer				5
Mobile Phone				4
TV				8
Refrigerator				10
your choice				
your choice				

Product lifetimes (last column) are from the United Nations Environment Programme (UNEP), 2009 report.

Did you replace your product before you should have ? Less than, ***How many years do they usually work***?

_____

_____

Which products could you have used for longer? How?

_____

_____

Did you need as many of each product? Why or why not?

_____

_____

How could you extend the life of your products and reduce the amount of e-waste?

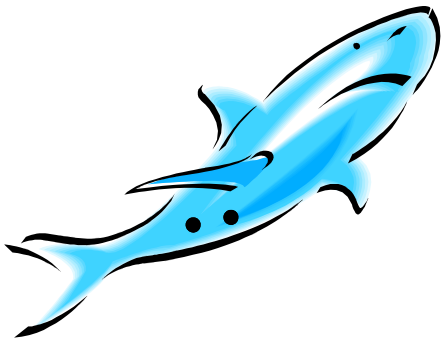
_____

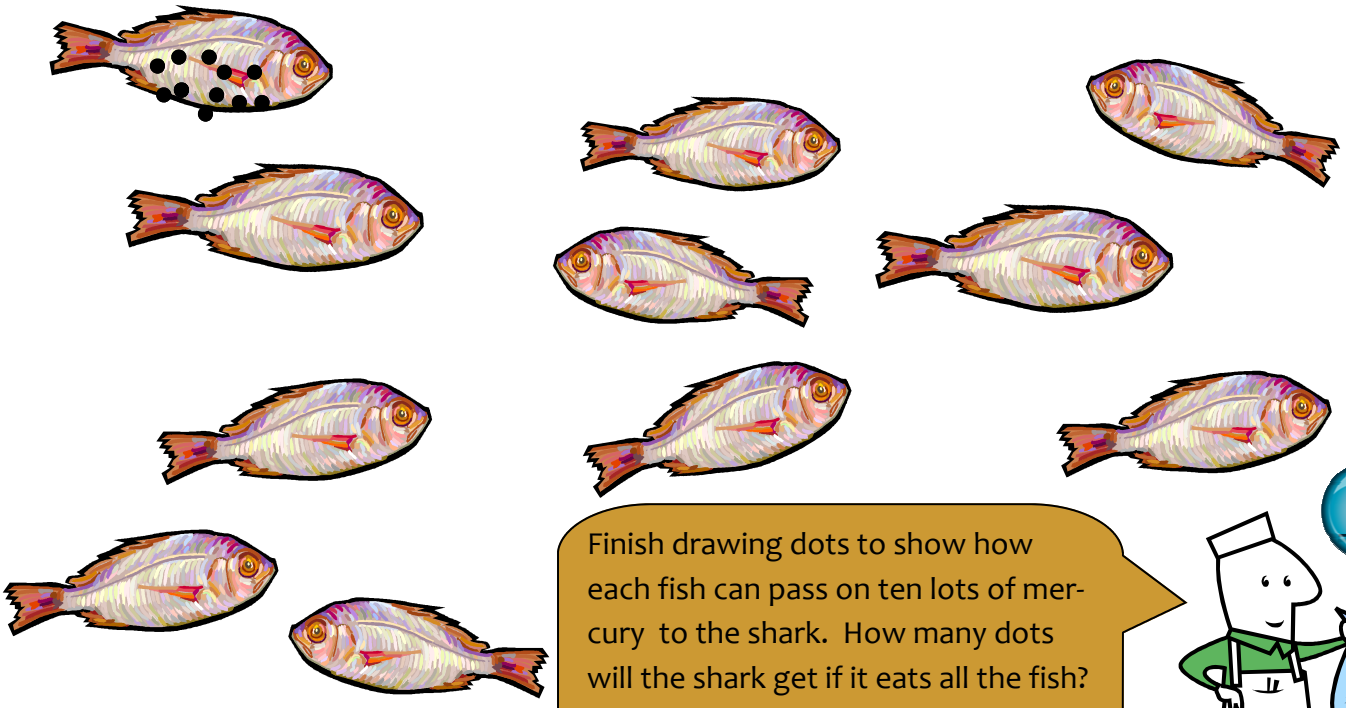
_____

Biological Magnification

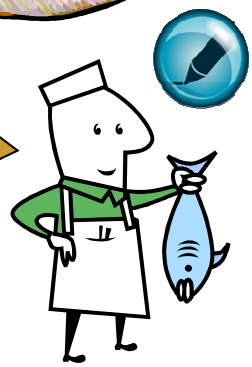
Mercury was one of the metals eaten by early marine life. If these animals became fossilised they stored deposits of mercury in the ground. Human beings mine mercury and other metals, to make electronic devices. When not recycled properly mercury can leach back into the soil and then water.

A poison like mercury is eaten and then absorbed by a small fish. If a shark eats 100 of these small fish, then the shark has 100 times the amount of mercury. The more of these poisoned fish the shark eats, the more mercury it has in its body. This might eventually kill the shark. Or if we eat the shark (flake) we will eat the poison mercury we threw away! (Flannery, 2010, *Here On Earth*)





Finish drawing dots to show how each fish can pass on ten lots of mercury to the shark. How many dots will the shark get if it eats all the fish? How many will you get if you eat some flake (shark)?



Images from Microsoft Clip Art

E-waste Movies to Watch

Buy it, use it, junk it, it's toxic (Greenpeace)

http://www.youtube.com/watch?v=4mLtheejM30

Tracking a cheap and exploitative e-waste disposal programme.

SIMS Recycling Solutions (SIMS America)

http://www.youtube.com/watch?v=6ap2uKzclzU&feature=related

How e-waste is recycled at SIMS.

Toxic Electronic Waste Zombies Come to Town (TEC video)

http://www.youtube.com/watch?v=Bw3ZNTqoz0I

An act of civil disobedience to make a point about e-waste.

Giving new life to an old PC (Materials Processing Corporation - MPC)

http://www.youtube.com/watch?v=uSvfun8FC-c&feature=related

Shows how old electronics are recycled. Nothing that enters MPC's facility is sent to landfill.

TV Hack E-waste (Triple J - 2009)

http://www.youtube.com/watch?v=dcLWaG5HMwI

Unlike other developed countries, Australia does not have a policy for dealing with its e-waste. 140 million tonnes of e-waste is generated each year and almost all of it goes to landfill.

Illegal E-waste Exposed (Greenpeace)

http://www.youtube.com/watch?v=bIS9KomW_Rw&feature=channel

A container of electronic waste in the US was intercepted in Hong Kong by Greenpeace activists.

The Electronic Wasteland (60 Minutes USA, November 18)

http://www.cbsnews.com/video/watch/?id=4586903n

Scott Pelley reports on where the millions of computer monitors, cell phones and other electronic refuse our society generates end up.

Futurama E-waste Delivery (Season 6, Episode 3, Airdate 7/1/2010)

http://www.comedycentral.com/videos/index.jhtml?title=e-waste-delivery&videoId=314027

Fry, Leela and Bender find pollution and child labor when they visit the Third World of the Antares System to deliver e-waste.

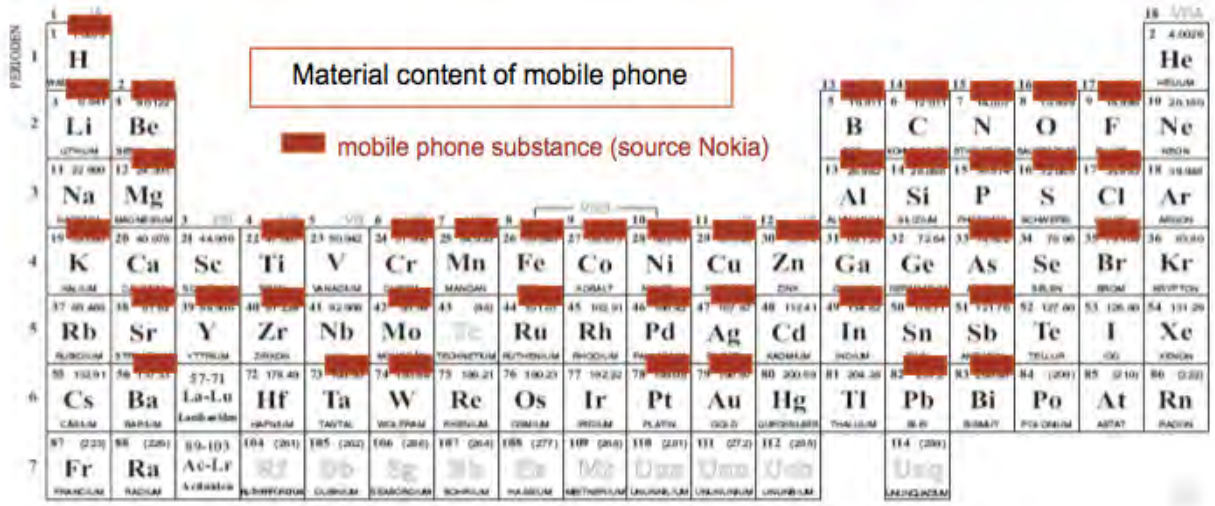
I'm a Mac ... and I've Got a Dirty Secret (Enough Project)

http://www.youtube.com/watch?v=5Ycih_jMObQ&feature

A parody of the Mac versus PC advertisements that examines e- waste.

E-waste is Dangerous & Toxic!

Electronic devices are made up of many different metals, plastics (polymers) and other chemicals. A mobile phone may contain up to 40 different elements of the periodic table, which is a chart that scientists use to group all chemicals. When e-waste is recycled these metal resources can be used again. Around the world this is a potential resource of 40 million tonnes each year (UNEP, 2009).



This image from Nokia and Simcore is in the United Nations report on e-waste (UNEP, 2009), which describes the problem of e-waste and possible solutions.

Use your research skills to find out how these chemicals ***impact*** on your ***health*** and the health of the ***environment***. Or perhaps you can remember from your visit to CERES. Add more chemicals of your own to the list.

CHEMICAL	SYMBOL	HEALTH IMPACTS	ENVIRONMENTAL IMPACTS
PVC	PVC		
Lead	Pb		
Chromium	Cr		
Cadmium	Cd		
Mercury	Me		
Copper	Cu		
Tantalum (Coltan)	Ta		
your choice			
your choice			

E-waste Recycling Options

How to Recycle Your Batteries

SITA Battery Recycling

There is an easy step to battery recycling in Melbourne and surrounding suburbs.

1. Call SITA on 13 13 35 and our Dandenong customer service centre will deliver a flat-packed battery recycling box.

2. You can place your box in a prominent area in your school or work.

3. Once the box is full, you just call 13 13 35 to arrange collection and for a new box.

Visit www.sita.com.au to get more information

How to Recycle Your Computer

BYTEBACK Computer Recycling

Byteback is a free computer take-back program to help people dispose of equipment that has reached the end of its useful life responsibly. Any companies and individuals can deposit unwanted computers at ByteBack locations.

You can find these locations at www.bytebackaustralia.com.au

How to Recycle Your Mobile Phone

Mobile Muster Phone Recycling

Three easy ways to recycling your mobile phone

A. Find the nearest collection point near your home

B. Use the free reply paid mailing label

Just go to the site www.mobilemuster.com.au to find the application form and follow the instructions.

C. Pick up a free recycling satchel from participating Australia Post outlets

More information call 1300 730 070 or visit Mobile Muster website

Where to recycle other things…

You can find more recycling locations at http://recyclingnearyou.com.au/

Simple steps to find nearest locations to your home:

1. Go to the site, use the research section. Then enter your state, then your suburb or council name or postcode

3. Choose what things you want to recycle

4. Finally, press 'send'. You will find many useful locations near your home

Happy Recycling!

Other Useful Websites

WEEMAN: http://weeeman.org/

Clean Up Australia: http://www.cleanup.org.au/au/

Story of Stuff: http://storyofstuff.org/

CERES: www.ceres.org.au

Conflict Minerals: http://blog.invisiblechildren.com/2010/06/conflict-minerals-101/

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E-waste Bits & Pieces

Match the small words to the major sorts of e-waste in the boxes.

Computers & Monitors

Television

Mobile Phones

payback period

copper

mercury

gorilla

silver

coltan

e-waste

Computerbank

rechargeable

digital

lead

Byteback

solar charger

5185 cars

leaching

cadmium

biological magnification

SIMS Recycling

cathode ray tube

glass

Notes Page

Kevin the Kingfisher says, use this page to write notes about how you can reduce e-waste.

How good are you at recycling e-waste?

Use the scorecard to keep track of how often you recycle your family's e-waste. Then send it back to CERES!

COMMUNITY ENVIRONMENT PARK

E-RECYCLING SCORECARD

Place a ✓ in a box each time you recycle one of these products:

Battery					
Computer					
Mobile phone					
TV/DVD players					
Printer cartridges					

Post this card to CERES when have recycled at least 3 products.

Name _____

School Name _____

Year _____

Address - CERES Cnr Roberts & Stewart Sts Brunswick East Vic 3057

Cut along the dotted line

CERES
Community Environment Park

Cnr Roberts and Stewart Streets

Brunswick East VIC 3057

T: 03 93890144

Creating a new way of being

The Centre for Education and Research in Environmental Strategies is an award winning, not-for-profit, environment and education centre and urban farm located by the Merri Creek in East Brunswick, Melbourne.

The Recycling Solutions division of Sims Metal Management Limited was created in response to the increasing social and political pressures to prevent undesirable and often hazardous materials found in electrical and electronic products being disposed of in an environmentally unsound manner.

The CECV, through diocesan Catholic Education Offices supports and leads Catholic schools to provide exemplary education for students. CECV Placed Teachers work through the Catholic Education Office Melbourne to guide learning in, outside and beyond the classroom, through host organisations like CERES.