

Recycling metals — KS2

Do you know where on earth metals come from?

Metals are 'minerals' found in rocks deep in the Earth's crust and called 'ore'. You might have heard of 'iron ore'. There are lots of different ores for different metals.

How does rock get turned into metal?



Step 1: Cut down trees/vegetation to get to the land to drill.



Step 2: Drill down deep to get rocks and ore.



Step 3: Ore is heated with chemicals until it melts and we get liquid metal.



Step 4: The liquid metal hardens as it cools and becomes hard metal.

Can you think of 2 reasons constantly drilling to get rock to turn into metal might be a problem?

1.
2.

Reduce, reuse, recycle

What are the problems with metal production?

1. When you buy food or drink in a can, remember it has taken a lot of work, water and energy to turn ore into a can. To use it for a very short time and throw it away is a waste of the earth's 'resources'.
2. If we keep cutting down trees/vegetation and digging for rocks we are destroying the earth and animals that live there.
3. Drilling and getting rock and ore creates a lot of pollution. Aluminium which makes cans is one of the most polluting. Melting it down ('smelting') and turning rock into metal also creates pollution.
4. All this is contributing to climate change by both deforestation and creating pollution.

Are these a good use of earth's resources?

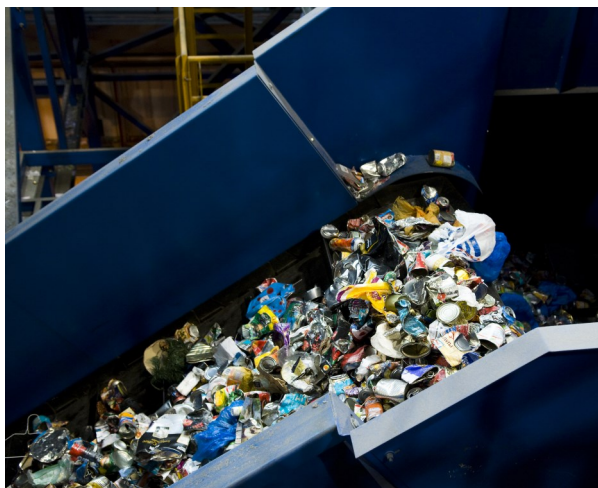


FACT: It takes **much less** energy to melt and remake metals than it does to get new metals from their ores which means **a lot less** water and electricity is used and **a lot** less pollution is created from recycling metals. (see page 6)

Reduce, reuse, recycle

Once I have put my clean metals in the recycling bin where does it go?

It gets taken by the bin men to the Materials Recycling Facility in Smugglers Way, Wandsworth. We call it the MRF (pronounced MURF).



Here the recycling bounces along a conveyor belt and gets separated. The metals are separated by a big magnet.

At the end of the belt is a big crusher which crushes the sorted metals into big cubes called 'bales'.

The bales of metals are put onto a big transport truck and taken to a recycling factory in the UK or Europe.



Can you recognise any of the tins in this crushed bale?

I can see a baked bean tin!

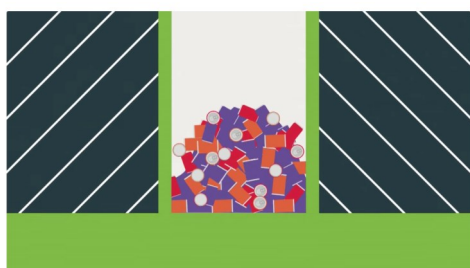
Don't forget clean metal lids and the tops of food tins CAN be put in your recycling.

Reduce, reuse, recycle

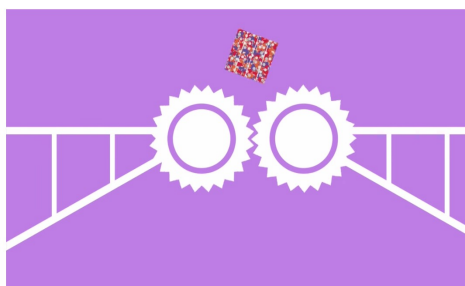
How do metals actually get recycled at the recycling factory?



The bales are unloaded and split onto a conveyor belt. The metals are washed and cleaned. Although they are washed we would like them in the recycling bin clean so other recycling doesn't get dirty.



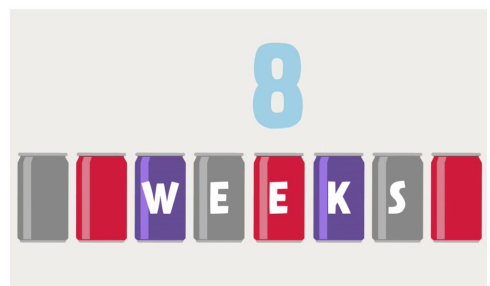
The clean metals are then are crushed back into bales.



The bales of metals are then shredded into little pieces.

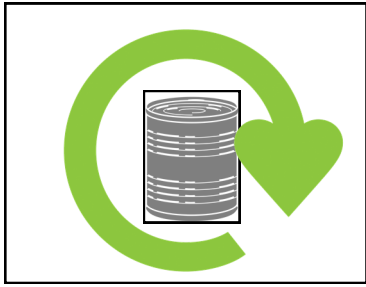
The shredded metal is heated to high temperatures so they can be melted into blocks.

The blocks or ingots are flattened and turned back into cans. It only takes 8 weeks to get a new can back into the supermarkets.



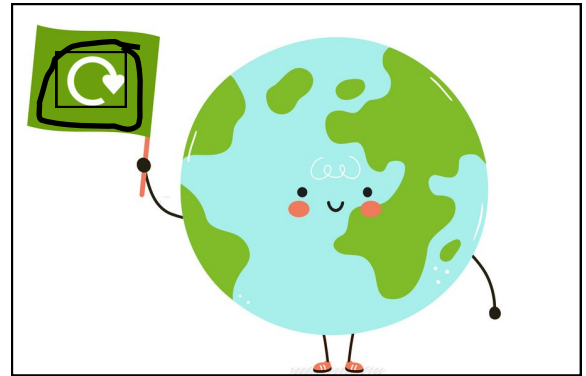
See the full video on metal recycling here:
<https://www.recyclenow.com/recycling-knowledge/how-is-it-recycled/cans>

Reduce, reuse, recycle



Did you know that metals can be recycled infinitely—which means that the same can/tin can be collected and recycled forever—therefore it makes sense to remember to put it in your recycling bin.

1 in every 3 drinks cans sold in the UK are drunk away from home. It is important that it is saved by putting it in recycling rather than throwing it away.



If you are out and about and can't find a recycling bin, take it home. Take responsibility. If you chose to buy it, choose to get rid of it properly. More outside bins isn't a solution to the amount of rubbish created.

If metals cans end up in the environment it can take as long as 50 years for a steel food can to decompose, and as long as 200 years for aluminium to break down. This isn't as long as plastic bags but it's still quite a long time!

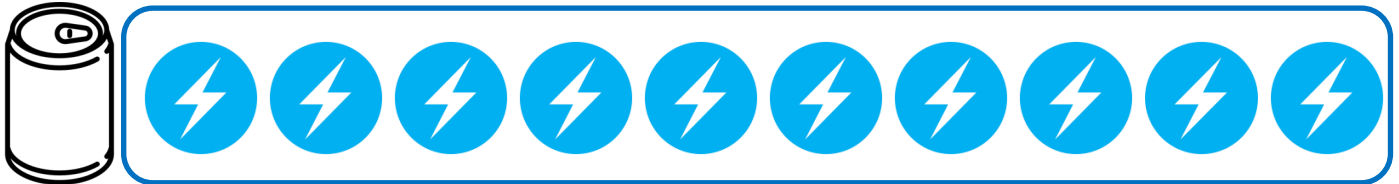


Remember each can could be recycled and be back on the supermarket shelf in just 8 weeks.

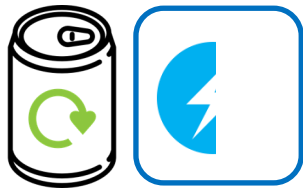
Aluminium is a valuable metal that melts at a relatively low temperature, so it is particularly attractive for recycling.

Reduce, reuse, recycle

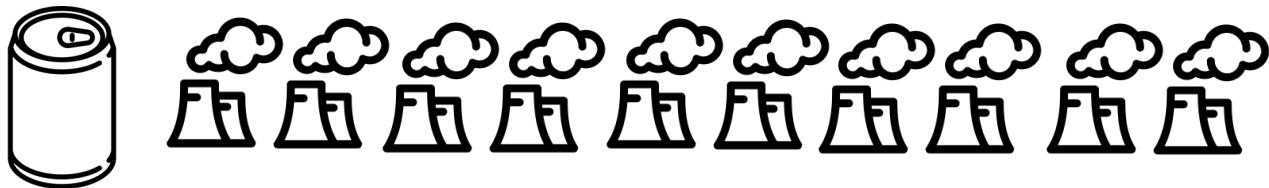
Recycling aluminium saves around **95%** of the energy needed to make the metal from ore. And it saves around **95%** of the greenhouse gas emissions



Energy used to make 1 can from ore



Energy used to make 1 can from recycled metal



Greenhouse gases created to make 1 can from ore



Greenhouse gases created to make 1 can from recycled metal



**Isn't that amazing how much energy/
pollution recycling saves?**

Reduce, reuse, recycle

Activity:

Why not try to see how much your household can save?



1. Count how many metal cans you put in your recycling bin (any type of food/drinks can) in one week.
2. Go back through this worksheet and find out how many hours of electricity is saved by recycling one can.
3. Using the amount of cans you have in your home recycling work out how many hours of tv you could watch from the energy/electricity you have saved by recycling your tin cans.

I have amount of tin cans in my recycling during one week

Recycling 1 tin can saves hours of energy/electricity

4.

I can watch amount of TV in a week by using the energy I have saved

5. Can you work out how many hours this works out over a year?

Think how many weeks there are in a year and multiply by the amount of hours you have saved in 1 week from your answer above.

I can watch amount of TV in a year by using the energy I have saved

Reduce, reuse, recycle

Food cans are also fun to turn into something else instead buying something new. Make sure you use a can opener that doesn't leave sharp edges and ask an adult to help. Here are some fun ideas we found:



More Reading:

More about how metals are recycled

<http://ypte.org.uk/factsheets/recycling/recycling-metals#section>