

Renewed Items

This activity involves an online "scavenger hunt" as well as "jig-saw" learning.

Objectives

Students will identify processes involved in the recycling of various materials.
Students will identify reasons for recycling various materials.

Instructional Procedures

- 1) Show students an item that could be recycled and an item that it could be recycled into. (examples: an empty pop bottle → polar fleece sweater, or a metal can → piece of rebar, plastic milk jug → plastic lawn furniture)
- 2) Ask the students how these items are related. Explain that these are items that can be recycled (bottle, can, jug) and what they can be recycled into (fleece, rebar, lawn furniture).
- 3) The students will go on an online "scavenger hunt" to research their assigned recyclable item and then devise an imaginative presentation to share with the class or possibly a group of younger students. Presentations could be oral, power point, poster, demonstration, etc. They should strive to make them interesting.
- 4) Students will be divided into groups. Each group will be assigned a resource that can be recycled.
 - A. vehicle tires
 - B. milk cartons/jugs
 - C. plastic bottles (pop)
 - D. glass bottles
 - E. paint
 - F. oil
 - G. electronics
 - H. aluminum cans
 - I. steel
- 5) Each group will work from the supplied worksheet. Each worksheet lists key questions to be answered through the students' research and in their finished projects, as well as suggested links to find the answers. These worksheets can

be put on the school's server so that the students do not need to type in the links, or they could be given a paper copy to work from. There is a teacher version of each worksheet that tells what information can be found on each website link. There are 9 worksheets, 1 for each recyclable material listed in Step 4.

- 6) Each worksheet includes a question on the processes used in recycling the item. The processes include things such as how the item is sorted (manually, using magnets, flotation, etc.), how the items are cleaned, and other process the item needs to go through before it becomes a useable material again.
- 7) When the students have completed their projects they should present them to the class. This ensures that the entire class gets all the information.
- 8) You may wish to have the students evaluate each other's presentations based on the key questions and on quality of work.



Renewed Items Student Worksheet -Tires

- 1) How are new tires made?
- 2) Where can tires be taken to be recycled in your area?
- 3) What processes are used in recycling tires?
- 4) What are tires recycled into?
- 5) What are the benefits of recycling tires?

Where to Look

<http://www.saskwastereduction.ca/dbase.php>

http://www.scraptire.sk.ca/index.php?Itemid=25&id=12&option=com_content&task=view

<http://www.youtube.com/watch?v=lf5t783NZFY>

<http://science.discovery.com/search/results.html?query=how+its+made+tires>

<http://dsp-psd.tpsgc.gc.ca/Collection-R/LoPBdP/BP/bp431-e.htm>

<http://www.albertarecycling.ca/BasicContent.aspx?id=334>

<http://www.freepatentsonline.com/5634599.html>

http://www.catraonline.ca/pdf/Recyc_2006_Pneus.pdf

<http://www.youtube.com/watch?v=xmOkvUlpTL0&feature=related>



Renewed Items Student Worksheet - Milk Cartons/Jugs

- 1) How are milk jugs/cartons made?
- 2) Where in your area can milk jugs/cartons be taken for recycling?
- 3) What processes are used in recycling the jugs/cartons?
- 4) What can the jugs/cartons be made into?
- 5) What are the benefits of recycling milk carton and jugs?

Where to Look

Milk Cartons

<http://www.recycleplus.com/recycle-milk-cartons.shtml>

<http://www.enotes.com/how-products-encyclopedia/milk-carton>

<http://www.milkcontainerrecycling.com/learn.htm>

<http://www.saskwastereduction.ca/dbase.php>

<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/>

<http://www.cleanaway.com.au/clwywr/lib51004/papercardboardliquidpaperboard.pdf>

Milk Jugs

<http://www.envirokids.ca/pdf/milkcontainerrecycling.pdf>

<http://www.saskwastereduction.ca/dbase.php>

<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/>

<http://www.milkcontainerrecycling.com/learn.htm>

<http://www.csmonitor.com/2005/0913/p18s02-hfks.html>

<http://www.cleanaway.com.au/clwywr/lib51004/plastic.pdf>

<http://www.youtube.com/watch?v=-JQYwF4VyiY>



Renewed Items Student Worksheet - Plastic Bottles

- 1) How are plastic bottles made?
- 2) Where can plastic bottles be taken for recycling?
- 3) What processes are used in recycling plastic bottles? (sorting, cleaning, etc.)
- 4) What are the recycled bottles made into?
- 5) What are the benefits of recycling plastic bottles?

Where to Look

http://www.csr.org/Earth_Week/plastic.html

<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/index.php>

<http://www.plastics.ca/newsroom/default.php?ID=162>

<http://www.npiplastic.com/recyclingprocess.htm>

<http://www.cpia.ca/teachers/news/details.php?ID=988>

<http://www.saskwastereduction.ca/dbase.php>

<http://www.recyclingproject.org/did-you-know.htm>

<http://www.saskwastereduction.ca/resources/plastics/afterlife.html>

<http://www.cleanaway.com.au/clwywr/lib51004/plastic.pdf>



Renewed Items Student Worksheet - Glass

- 1) How is glass made?
- 2) Where can glass be taken to be recycled in your area?
- 3) What processes are used in recycling glass? (sorting, cleaning, etc.)
- 4) What products are made from recycled glass?
- 5) What are the benefits of recycling glass?

Where to Look

<http://www.bigsiteofamazingfacts.com/how-is-glass-made>

<http://www.plovers.net/ploversblog/tag/recycled-glass/>

<http://green.msn.com/Home/How-Is-Glass-Recycled/>

<http://green.msn.com/Home/Glass-Recycling/>

http://www.csr.org/Earth_Week/glass.html

<http://www.saskwastereduction.ca/dbase.php>

<http://www.farwestfibers.com/Products-and-Services/Glass.html>

<http://www.youtube.com/watch?v=2xzf3Cgz99I&feature=related>

<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/index.php>

<http://www.saskwastereduction.ca/resources/glass/sask-glass.html>

<http://www.recyclingproject.org/did-you-know.htm>

<http://www.cleanaway.com.au/clwywr/lib51004/glass.pdf>



Renewed Items Student Worksheet - Paint

- 1) How is paint made?
- 2) Where can you take paint for recycling in your area?
- 3) What processes are used in paint recycling?
- 4) What can recycled paint be used for?
- 5) What are the benefits of recycling paint?

Where to Look

<http://www.physorg.com/news93619333.html>

<http://www.uis.edu/facilityservices/paint.htm>

http://www.answerbag.com/q_view/70116

<http://www.saskwastereduction.ca/dbase.php>

<http://www.madehow.com/Volume-1/Paint.html>

<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/index.php>

<http://www.recyclepaint.com/faqs.htm>



Renewed Items Student Worksheet - Oil

- 1) What processes are used in recycling oil?
- 2) Where is used oil collected in your area?
- 3) What is recycled oil used for?
- 4) Why is it important to recycle oil?

Where to Look

<http://www.fox41.com/Global/story.asp?S=6620459>

<http://www.usedoilrecycling.com/en/sk>

<http://www.youtube.com/watch?v=ue15NmMsYbQ>

<http://peakstoprairies.org/p2bande/autobody/abguide/fs9.cfm>

<http://www.saskwastereduction.ca/dbase.php>

<http://www.age.psu.edu/extension/factsheets/c/C21.pdf>



Renewed Items Student Worksheet - Electronics

- 1) What electronics can be recycled?
- 2) Where can electronics be taken for recycling in your area?
- 3) What processes are used in recycling electronics?
- 4) How are recycled electronics used?
- 5) What are the benefits of recycling electronics?

Where to Look

<http://www.youtube.com/watch?v=4n0wOnLNXwc&feature=related>

<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/>

<http://www.sarcsarcan.ca/sarcan/electronics/index.php>

<http://www.encorp.ca/electronics/productrecycling>

<http://digitaltrends.technology.sympatico.msn.ca/guide/161/How+to+Recycle+Your+Electronics.html>

http://www.sweepit.ca/index.php?option=com_content&view=article&id=2

<http://www.saskwastereduction.ca/dbase.php>

<http://green.sympatico.msn.ca/green-living-online-article.aspx?cp-documentid=868174>



Renewed Items Student Worksheet - Aluminum Cans

- 1) How are they made?
- 2) What processes do they go through to be recycled? (sorting, cleaning, etc.)
- 3) Where can they be returned in Saskatchewan for recycling?
- 4) What are they recycled into?
- 5) What are the benefits in recycling aluminum?

Where to Look

[http://www.city.burnaby.bc.ca/_shared/assets/Sanitation - Just the Facts - Aluminum4386.pdf](http://www.city.burnaby.bc.ca/_shared/assets/Sanitation_-_Just_the_Facts_-_Aluminum4386.pdf)

<http://earth911.com/metal/aluminum-can/how-are-aluminum-cans-made/>

<http://earth911.com/metal/aluminum-can/benefits-of-aluminum-can-recycling/>

<http://www.wisegeek.com/how-are-aluminum-cans-recycled.htm>

<http://www.lotfi.net/recycle/acan.html>

http://www.csr.org/Earth_Week/aluminum.html

<http://www.cleanaway.com.au/clwywr/lib51004/aluminium.pdf>

<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/index.php>

<http://www.saskwastereduction.ca/dbase.php>

<http://planetgreen.discovery.com/tech-transport/wasted-106a-recycling-plant.html>

<http://science.discovery.com/search/results.html?query=how+its+made+aluminum+cans&search.x=26&search.y=13>

<http://www.recyclingproject.org/did-you-know.htm>



Renewed Items Student Worksheet - Steel

- 1) What processes are used in recycling steel?
- 2) Where can you take steel to be recycled in your area?
- 3) What can be made from recycled steel?
- 4) What benefits are there in recycling steel?

Where to Look

http://www.csr.org/Earth_Week/steel.html

<http://www.recycleroom.org/know.asp>

<http://www.farwestfibers.com/Products-and-Services/Metal.html>

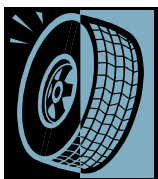
<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/index.php>

<http://www.saskwastereduction.ca/dbase.php>

http://www.uoregon.edu/~recycle/after_collection.html

<http://www.saskwastereduction.ca/resources/metal/steel.html>

<http://www.cleanaway.com.au/clwywr/lib51004/steel.pdf>



Renewed Items Teacher Reference Sheet - Tires

- 1) How are new tires made?
- 2) Where can tires be taken to be recycled in your area?
- 3) What processes are used in recycling tires?
- 4) What are tires recycled into?
- 5) What are the benefits of recycling tires?

Where to Look

<http://www.saskwastereduction.ca/dbase.php> where

http://www.scraptire.sk.ca/index.php?Itemid=25&id=12&option=com_content&task=view applications

<http://www.youtube.com/watch?v=lf5t783NZFY> new tires

<http://science.discovery.com/search/results.html?query=how+its+made+tires> video (solid tires)

<http://dsp-psd.tpsgc.gc.ca/Collection-R/LoPBdP/BP/bp431-e.htm> process, applications

<http://www.albertarecycling.ca/BasicContent.aspx?id=334> applications

<http://www.freepatentsonline.com/5634599.html> process

http://www.catraonline.ca/pdf/Recyc_2006_Pneus.pdf process

<http://www.youtube.com/watch?v=xmOkvUlpTL0&feature=related> process, applications



Renewed Items

Teacher Reference Sheet - Milk Cartons/Jugs

- 1) How are milk jugs/cartons made?
- 2) Where, in your area, can milk jugs/cartons be taken for recycling?
- 3) What processes are used in recycling the jugs/cartons?
- 4) What can the jugs/cartons be made into?
- 5) What are the benefits of recycling milk carton and jugs?

Where to Look

Cartons

<http://www.recycleplus.com/recycle-milk-cartons.shtml> applications

<http://www.enotes.com/how-products-encyclopedia/milk-carton> how they are made

<http://www.milkcontainerrecycling.com/learn.htm> process

<http://www.saskwastereduction.ca/dbase.php> where

<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/> applications

<http://www.cleanaway.com.au/clwywr/lib51004/papercardboardliquidpaperboard.pdf> process, benefits, general information, applications

Jugs

<http://www.envirokids.ca/pdf/milkcontainerrecycling.pdf> process, applications

<http://www.saskwastereduction.ca/dbase.php> where

<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/> applications

<http://www.milkcontainerrecycling.com/learn.htm> process, application

<http://www.csmonitor.com/2005/0913/p18s02-hfks.html> process and application

<http://www.cleanaway.com.au/clwywr/lib51004/plastic.pdf> general information, process, applications, benefits

<http://www.youtube.com/watch?v=-JQYwF4VyiY> process and application video



Renewed Items Teacher Reference Sheet - Plastic Bottles

- 1) How are plastic bottles made?
- 2) Where can plastic bottles be taken for recycling?
- 3) What processes are used in recycling plastic bottles? (sorting, cleaning, etc.)
- 4) What are the recycled bottles made into?
- 5) What are the benefits of recycling plastic bottles?

Where to Look

http://www.csr.org/Earth_Week/plastic.html applications

<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/index.php> applications

<http://www.plastics.ca/newsroom/default.php?ID=162> applications

<http://www.npiplastic.com/recyclingprocess.htm> processes and reasons

<http://www.cpia.ca/teachers/news/details.php?ID=988> processes

<http://www.saskwastereduction.ca/dbase.php> where

<http://www.recyclingproject.org/did-you-know.htm> general information

<http://www.saskwastereduction.ca/resources/plastics/afterlife.html> applications

<http://www.cleanaway.com.au/clwywr/lib51004/plastic.pdf> process, benefits, general information, applications



Renewed Items Teacher Reference Sheet - Glass

- 1) How is glass made?
- 2) Where can glass be taken to be recycled in your area?
- 3) What processes are used in recycling glass? (sorting, cleaning, etc.)
- 4) What products are made from recycled glass?
- 5) What are the benefits of recycling glass?

Where to Look

<http://www.bigsiteofamazingfacts.com/how-is-glass-made> - making glass

<http://www.plovers.net/ploversblog/tag/recycled-glass/> value

<http://www.saskwastereduction.ca/dbase.php> where

<http://www.farwestfibers.com/Products-and-Services/Glass.html> processes

<http://www.youtube.com/watch?v=2xzf3Cgz99I&feature=related> making glass video

<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/index.php> applications

<http://www.saskwastereduction.ca/resources/glass/sask-glass.html> applications

<http://www.cleanaway.com.au/clwywr/lib51004/glass.pdf> general information, process, making, benefits



Renewed Items Teacher Reference Sheet -Paint

- 1) How is paint made?
- 2) Where can you take paint for recycling in your area?
- 3) What processes are used in paint recycling?
- 4) What can recycled paint be used for?
- 5) What are the benefits of recycling paint?

Where to Look

<http://www.physorg.com/news93619333.html> processes, applications

http://www.answerbag.com/q_view/70116 how made

<http://www.saskwastereduction.ca/dbase.php> where

<http://www.madehow.com/Volume-1/Paint.html> how made

<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/index.php> applications

<http://www.recyclepaint.com/faq> applications



Renewed Items Teacher Reference Sheet - Oil

- 1) What processes are used in recycling oil?
- 2) Where is used oil collected in your area?
- 3) What is recycled oil used for?
- 4) Why is it important to recycle oil?

Where to Look

<http://www.fox41.com/Global/story.asp?S=6620459> applications

<http://www.usedoilrecycling.com/en/sk> why and where in area

<http://www.youtube.com/watch?v=ue15NmMsYbQ> process and applications video

<http://peakstoprairies.org/p2bande/autobody/abguide/fs9.cfm> applications

<http://www.saskwastereduction.ca/dbase.php> where

<http://www.age.psu.edu/extension/factsheets/c/C21.pdf> process



Renewed Items Teacher Reference Sheet – Electronics

- 1) What electronics can be recycled?
- 2) Where can electronics be taken for recycling in your area?
- 3) What processes are used in recycling electronics?
- 4) How are recycled electronics used?
- 5) What are the benefits of recycling electronics?

Where to Look

<http://www.youtube.com/watch?v=4n0wOnLNXwc&feature=related> process video

<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/> process

<http://www.sarcsarcan.ca/sarcan/electronics/index.php> which

<http://www.encorp.ca/electronics/productrecycling> processes

<http://digitaltrends.technology.sympatico.msn.ca/guide/161/How+to+Recycle+Your+Electronics.html> why

http://www.sweepit.ca/index.php?option=com_content&view=article&id=2 options

<http://www.saskwastereduction.ca/dbase.php> where

<http://green.sympatico.msn.ca/green-living-online-article.aspx?cp-documentid=868174> what to do with various electronics



Renewed Items

Teacher Reference Sheet – Aluminum Cans

- 1) How are they made?
- 2) What processes do they go through to be recycled? (sorting, cleaning, etc.)
- 3) Where can they be returned in Saskatchewan for recycling?
- 4) What are they recycled into?
- 5) What are the benefits in recycling aluminum?

Where to Look

http://www.city.burnaby.bc.ca/_shared/assets/Sanitation_-_Just_the_Facts_-_Aluminum4386.pdf - process applications

<http://earth911.com/metal/aluminum-can/how-are-aluminum-cans-made/> how made

<http://earth911.com/metal/aluminum-can/benefits-of-aluminum-can-recycling/> benefits of recycling

<http://www.wisegeek.com/how-are-aluminum-cans-recycled.htm> process

<http://www.lotfi.net/recycle/acan.html> process

http://www.csr.org/Earth_Week/aluminum.html process

<http://www.cleanaway.com.au/clwywr/lib51004/aluminium.pdf> benefits, general information, process

<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/index.php> applications

<http://www.saskwastereduction.ca/dbase.php> where collected

<http://planetgreen.discovery.com/tech-transport/wasted-106a-recycling-plant.html> - process

<http://science.discovery.com/search/results.html?query=how+its+made+aluminum+cans&search.x=26&search.y=13> – how made video

<http://www.recyclingproject.org/did-you-know.htm> general information



Renewed Items Teacher Reference Sheet – Steel

- 1) What processes are used in recycling steel?
- 2) Where can you take steel to be recycled in your area?
- 3) What can be made from recycled steel?
- 4) What benefits are there in recycling steel?

Where to Look

http://www.csr.org/Earth_Week/steel.html - processes

<http://www.recycleroom.org/know.asp> applications

<http://www.farwestfibers.com/Products-and-Services/Metal.html> processes

<http://www.sarcsarcan.ca/sarcan/wheredoesitgo/index.php> applications

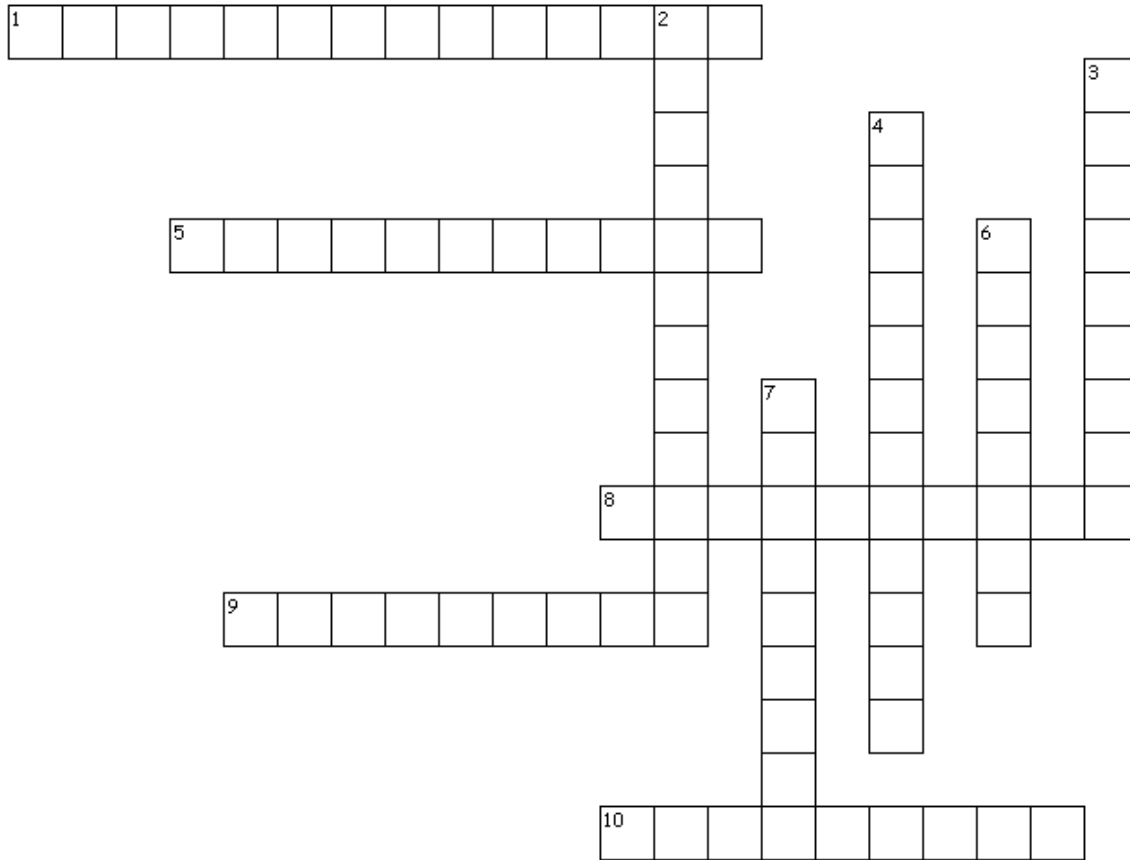
<http://www.saskwastereduction.ca/dbase.php> where

http://www.uoregon.edu/~recycle/after_collection.html recycling process

<http://www.saskwastereduction.ca/resources/metal/steel.html> benefits

<http://www.cleanaway.com.au/clwywr/lib51004/steel.pdf> benefits, process, general information

Renewed Items - Processes of Recycling Crossword



Across

- 1. physical process used to separate complex mixtures
- 5. process of changing from liquid to gas
- 8. process of removing one substance from another, often a solid from a liquid
- 9. to separate materials using a screen
- 10. process used in separating certain metals

Down

- 2. process using water and centrifugal force to reclaim paper fibres
- 3. process used to separate materials of different densities
- 4. process of purifying a liquid by heating and cooling
- 6. process of heating metals to the melting point
- 7. process of forming something by pushing or forcing through a small opening

Word Bank

distillation	chromatography	screening	smelting	flotation
magnetism	hydropulping	extrusion	evaporation	filtration

Renewed Items - Processes of Recycling WordFind

a u f i t l a y c h s a m d d m t s u n
y x f o p i x r r v n e u v s l m q o e
h y d r o p u l p i n g l i r e s i i v
r s p b f e h s e g g o t t l v t a s a
n t r d z l l w h j b e i t t a h s o p
o e x y g y a e z r n y i s l o a x g o
i e s b d h l d c g e n i l u l b k x r
t l v s j p u t a t g d i d g r k n a a
a q f s k a m m q c r t d c d d t f m t
t l x n x r i g e s s o r i t s i x n i
o i v o q g n p a i n t n p n l x y e o
l x b t w o u h d o i r q i t g g z c n
f g d r l t m y i o a n n r c i d a t x
e d a a t a b l k p t w a z k s g z u m
s t j c k m j y q j h t u d x t h h s o
t m f q x o i l c k i s c r e e n i n g
m i e o j r r o n o g g n i l i a b c o
k m r z m h b k n l a c i n a h c e m t
n e s e c c v g t o i p j y o s y s u t
u t m m s h c v j d p t s x t y n s a i

Word Bank

aluminum	bailing	bottles
cartons	distillation	chromatography
electronics	evaporation	extrusion
filtration	flotation	glass
hydropulping	magnetism	mechanical
oil	paint	screening
shredding	smelting	tires
steel		