

The mystery of Recycling

An investigative report on what really happens to an aerosol can when placed at curbside.

Dennis Smith -EXAL



What really happened to Tin
and AL..they were last seen being dumped
into a recycling truck!



The mystery of Recycling

We are going to ask the tough questions!

Where did that recycling truck go?

What happens when it gets there?

When do the cans get separated?

What is a MRF?

Are the cans really recycled?

What is a reclamation plant?

Some facts and updates

Where can we get information on recycling?



The mystery of Recycling

- Your empty aerosol can is placed with various recycle products such as bottles, soup cans, food cans and beverage cans. Your local town or carting company picks up the recycle materials.



The mystery of Recycling

- Once picked up, the recycled material is delivered to a Materials Recovery Facility or “MRF” (not a Smurf). This facility, in Dutchess County NY, ships out 100 tons per month of tin plate and 10 tons per month of aluminum cans



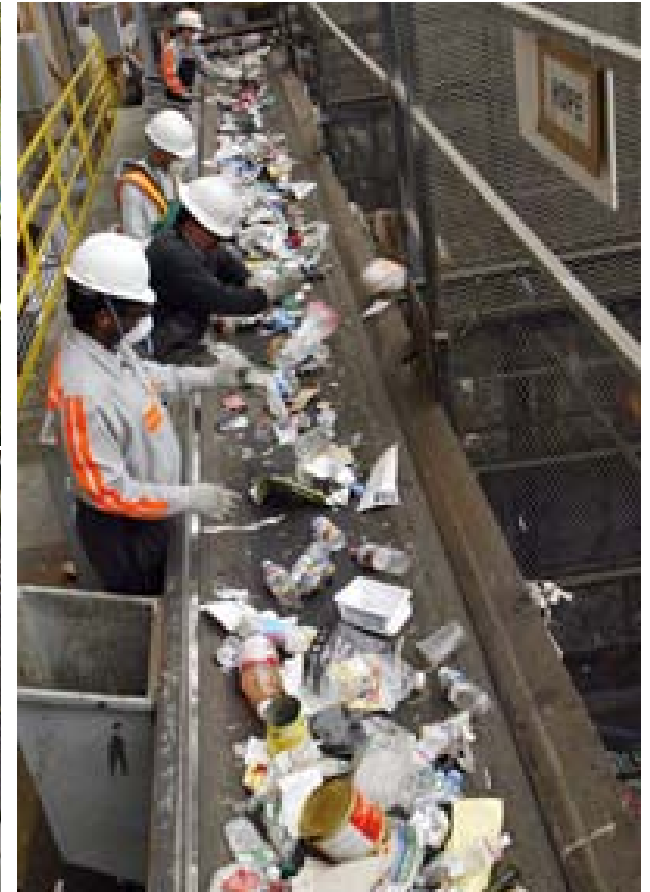
The mystery of Recycling

- ALL of the recycled materials picked up is dumped in one area. This is called Single Stream Recycling.



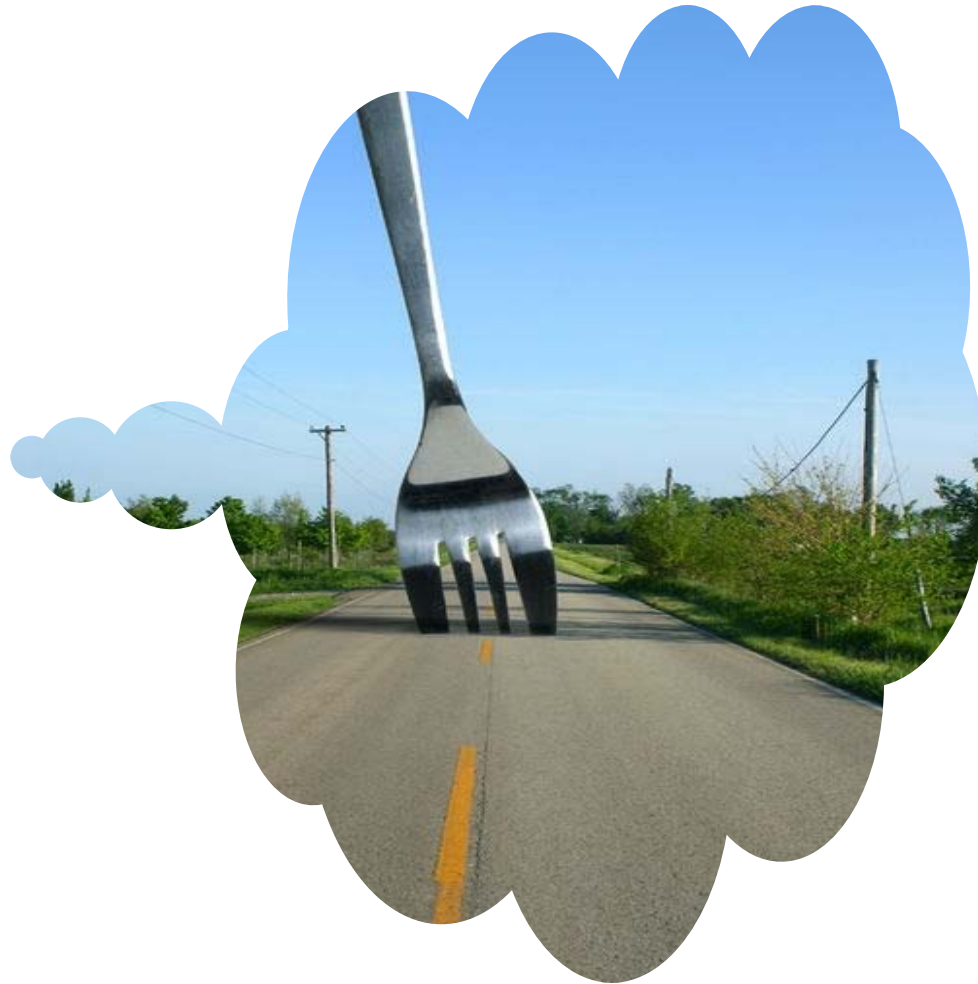
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- The MRF sorts the paper, plastic, cans and glass collected at curbside.



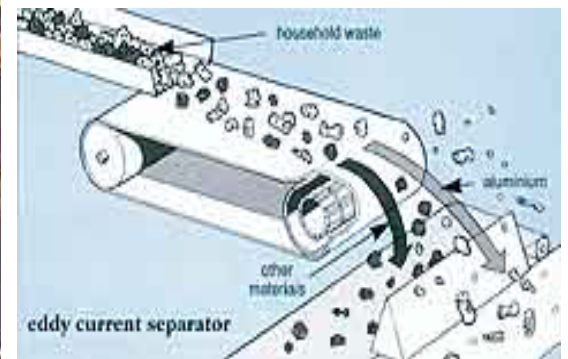
The mystery of Recycling

- This is the fork in the road for aluminum and tinplate cans. They go their separate ways.



The mystery of Recycling

- The tin cans are picked up by magnets along with other tin products. The aluminum cans are separated by hand or an eddy current separator.



The mystery of Recycling

- The separated material is now put in bales. Aluminum bales weigh about 650lbs and tin about 1375lbs .



The mystery of Recycling

- According to the Steel Recycling Institute, steel can end markets include steel mills and foundries. You can find more information about Steel at <http://www.recycle-steel.org/cans.html>.



The mystery of Recycling

- Aluminum cans are transported to a reclamation plant in Oswego, NY with their new family of beverage cans.



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- The cans tracked went to Novelis, the world's largest aluminum can recycler. Their reclamation plant in Oswego NY processes 10 million pounds of aluminum annually. Novelis is the world leader in aluminum rolling, producing an estimated 19 percent of the world's flat-rolled aluminum products. Novelis is also the world leader in the recycling of used aluminum beverage cans.



Smelter Process



The mystery of Recycling

Smelter Process

Baled Cans

- Received from MRF and separated
- Cans on conveyor pass over a heavy and light air knife
- Concern – foreign materials (steel, lead, brass)

Magnetic Separator

Cans pass through a magnetic separator.

Concern – Steel passing to furnace
THIS IS WHERE AL CANS WITH TINPLATE MTG CUPS ARE DROPPED FROM THE PROCESS.

Shredder

- 15 tons per hour
- Concern – pressurized containers

Vibrating fines screen
Small shreds are removed before going to de-coater

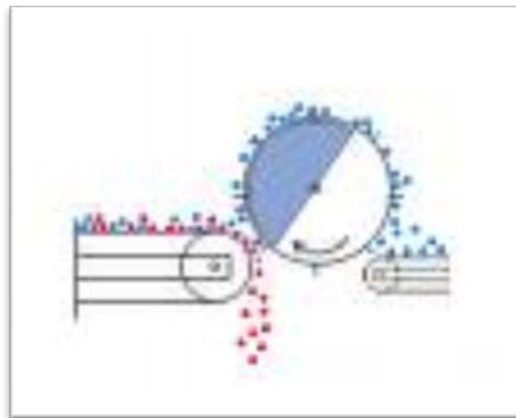
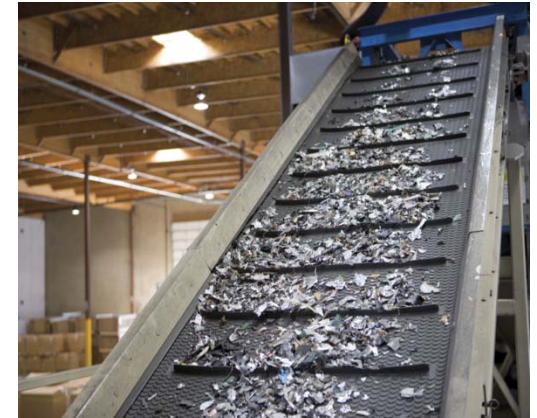
Put back into process as re-melt sows

De-coater
Coating are burned off at 500°C on insulated slow moving conveyor.
Gases to an afterburner

Melter Furnace
90 ton furnace burns at 700°C
Contaminates move to top of molten AL and are taken out
Concern – Small amount of lead can put finished aluminum out of spec

The mystery of Recycling

- All separated material on a conveyor is passed over an air knife to separate any foreign material like lead, brass, steel, etc.
- The cans are processed through a magnetic separator taking out steel, brass, wires and Aluminum cans with tinplate or tin free steel mounting cups.
- The separated metals are sold as scrap to be put into their respective recycle streams.



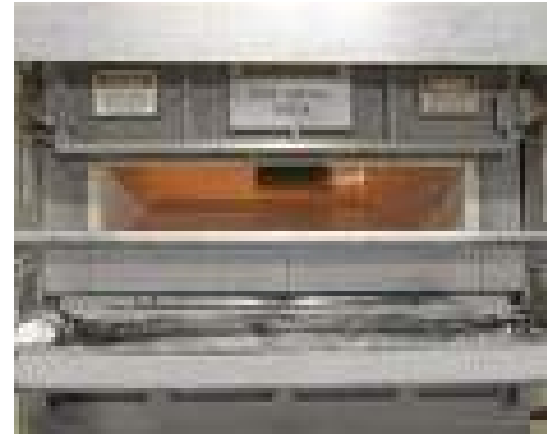
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Axe can in the picture was observed making it through the air knife section of the process. This can was pulled out of the process at the magnetic separator. Aluminum cans with tinplate or tin free steel mounting cups get pulled and end up in scrap to be sold. The reclamation plant would prefer if the aerosol can made it through the process. They paid market price for the aluminum and have to sell the pulled cans as scrap. Cans with aluminum mounting cups will in most cases make it through the stream at this plant.



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- The material now travels on a fines screen separator and pass through a De-coater before ready to melt.



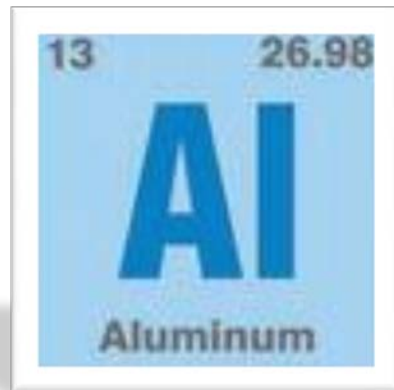
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- Once melted and treated, the aluminum is made into cast ingots of aluminum. These products are now ready to be made into rolls.



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Aluminum is the third most abundant element in the earth's crust after oxygen and silicon, and the most common metallic element: it forms some 8% of the earth's crust, and is extracted from bauxite.



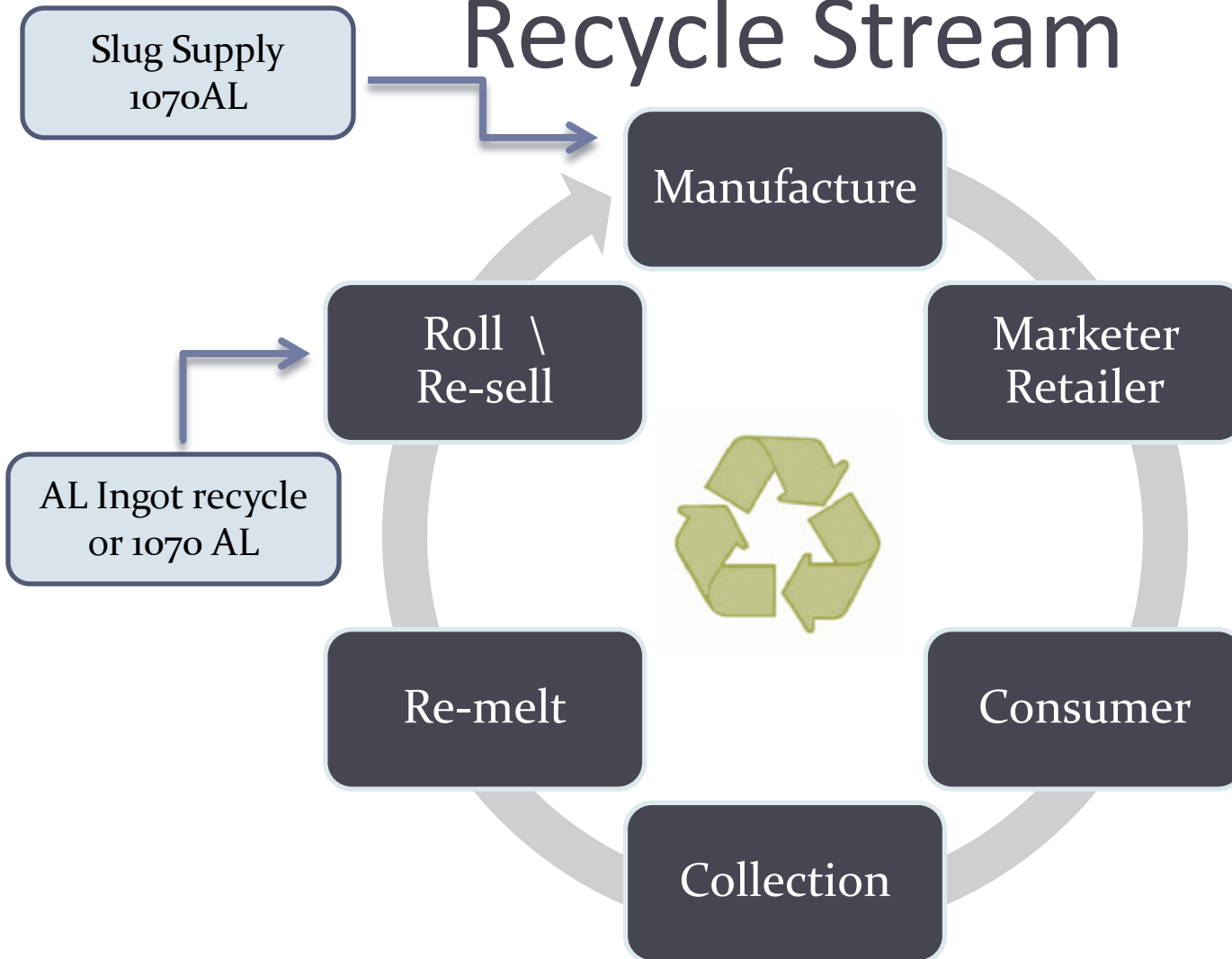
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How is bauxite mined?

Bauxite is a reddish rock, containing aluminum oxide, together with oxides of silicon, iron and other metals. It takes four tons of bauxite to make two tons of alumina, which makes one ton of aluminum.



The mystery of Recycling Recycle Stream



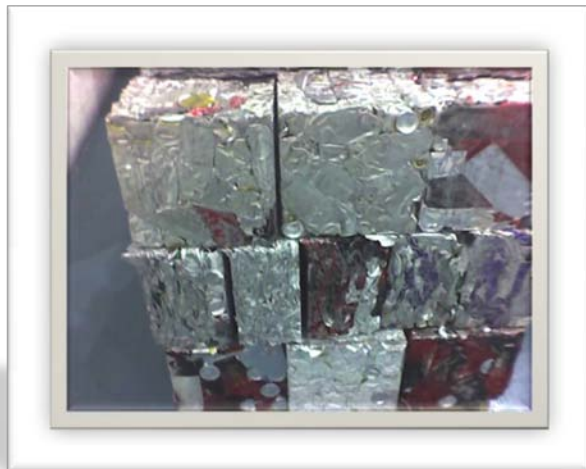
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Extruded aluminum cans today contain ZERO post consumer aluminum. The cans are absorbed into the much bigger stream of beverage cans. Beverage can stock is made with over 50% post consumer aluminum.



The mystery of Recycling

Fillers and producers of aluminum aerosol cans sell their scrap to local scrap dealers. This scrap will end up in countless aluminum products.



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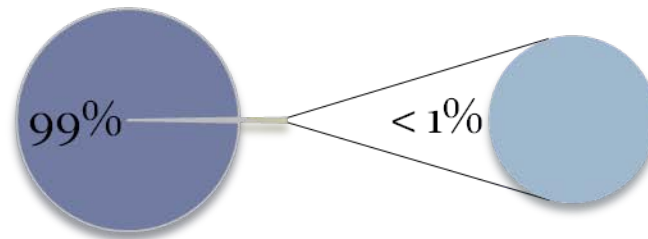
The environmental benefits of aluminum recycling are significant because aluminum produced from scrap requires just 5 percent of the energy needed to produce primary aluminum -- which means that up to 95 percent of related emissions, such as greenhouse gases, are avoided.



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US Production

- AL Beverage cans 131 billion
- AL Aerosol cans 753 million



*Aerosol can numbers from CSPA 2008 Product Survey
Beverage numbers from Can Manufacturers Institute*



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Who accepts aerosols?

New Haven, CT – Yes

Trumbull, CT- Not Specific

New Britain, CT – No

Cheshire, CT – Yes

Kent, NY – Yes

East Fishkill, NY-Yes

Westchester County-Yes

NY City – Yes

Shelton, CT – Not specific

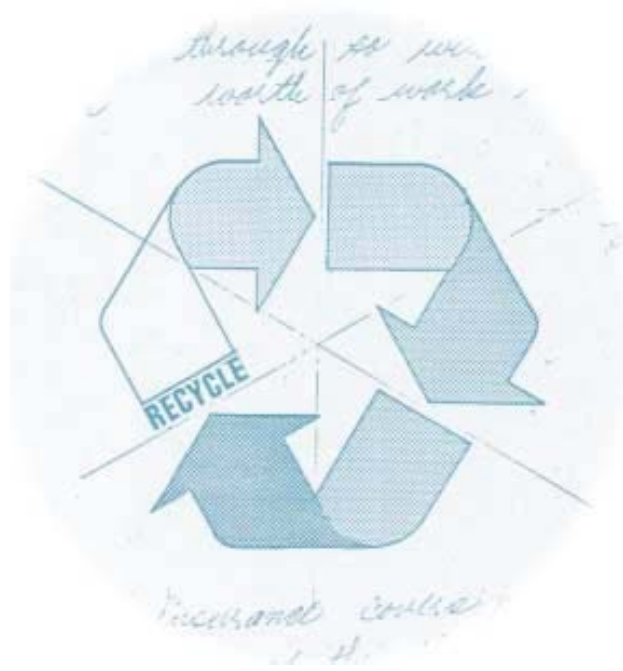
Bucks County, PA – Yes



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The Recycle Symbol

- The original winning symbol in a 1970 recycle contest won by College student Gary Anderson.



The mystery of Recycling

The signs we see on aerosols

Clockwise

- The Recycle Symbol
- Aluminum Recycle
- Green DOT signify payment to recycle company(Germany)
- Steel recycle



The mystery of Recycling

The signs we see on aerosols

Aerosol cans that do not use recycled content might use the recycle symbol with added wording such as “Please recycle your empty aerosol” Check with your legal dept.



The mystery of Recycling

We have been thinking about it for some time!

The recycling issue did not really surface in our industry until a very general report by Monty Johnsen on recycling in an April 1991 issue of Aerosol Age.



It popped up again in June 91 (CAPCO UPDATE) with a The Steele institute and Reynolds Recycling stating the ease of cans being recycled.



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We have been thinking about it for some time!

In January 1994 an article was written about “Life Cycle Analysis” or LCA or “Cradle to Grave” . These terms are used to determine the accounting of the energy and resources that go into making a product all the way through its life cycle to its final disposal.



In December of 1993 at CSMA (now CSPA), it was reported by the steel institute that “aerosol recycling was not out of the water, but can see the light”

In 1997 Factory Mutual said in a report to CSMA that they found no significant risk to a MFR from the addition of aerosol cans to the residential curbside. Facilities in Oswego, NY and Syracuse, NY participated in the report.



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Where do I find information on Recycling?

- CAPCO link to <http://www.nocfcs.org/environment/home.htm>
- SATA info at <http://www.southernaerosol.com>
- WAIB link at <http://www.waib.org/info.html>
- Steel Institute at <http://www.recycle-steel.org/cans.html>
- Aluminum Association at <http://www.aluminum.org//AM/Template.cfm?Section=Home>
- Earth911 at <http://earth911.com>



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The good news is that aluminum smelters desire 1070 aluminum (aerosol cans) and allow aerosols to be mixed in with UBC's. Tinplate aerosols have an easy path to recycling once in the stream.

The challenge is to make sure aerosols get into the recycle stream! Work with your local towns and keep aerosols out of the land fill!

Because of the times, recycling is percolating once again at regional and national levels. We need to work together to make sure all aerosols are accepted and flow in the recycle stream.



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THANK YOU....

Any Questions?

Dennis Smith – EXAL

