

Scrap is not waste.
Recycling is not disposal.

Scrap, once properly processed,
is a valuable raw material used in manufacturing.

Past Chair Joel Denbo, September, 2005
Before the House Subcommittee on Environment and Hazardous Materials.

What is Scrap?

Scrap is a term used to describe recyclable materials left over from every manner of product consumption, such as parts of vehicles, building supplies, and surplus materials. Often confused with waste, scrap in fact has monetary value.

“Scrap” includes:

Many products used in our homes -

- Washers & dryers
- Refrigerators
- Stainless steel sinks
- Aluminum window frames
- Aluminum cans
- Brass
- Chrome
- Copper
- Dies
- Cast metal toys, and many other items
- Automobiles - contain both ferrous and nonferrous materials, as well as “fluff”; catalytic converters are also scrap.
- Valves, piping, tanks, and condenser units exposed to chlorides and acids in petrochemical

The U.S.-based scrap recycling industry is a sophisticated, capital-intensive industry and the first link in the manufacturing supply chain. The industry processes more than 150 million tons of recyclable material each year into raw material feedstock for industrial manufacturing around the world. For more than 200 years, scrap recycling has been, and continues to be, integral to the U.S. economy, global trade and resource sustainability.

Source: www.isri.org

The industry contributed \$86 billion in 2008 and is one of the few contributing positively to the U.S. balance of trade, exporting \$28.6 billion in scrap commodities in 2008.

Source: Wikipedia

In the U.S. scrap is a \$86 billion industry in 2008, employing over 85,000 persons.

150 million metric tons of scrap materials recycled annually including:

- 81.6 million tons of iron and steel
- 50 million tons of paper
- 5 million tons of aluminum
- 1.8 million tons of copper
- 2 million tons of stainless steel
- 1.3 million tons of lead
- 420,000 tons of zinc
- 576,000 tons of plastic (bottles)
- 1.8 million tons of electronics
- 93 million tires

Specification-grade scrap is a raw material feedstock for U.S. manufacturing:

- Two out of every three pounds of steel made in the U.S. is manufactured using ferrous scrap.
- 60% of the metals and alloys produced in the U.S. are made from nonferrous scrap
- 33% of U.S. aluminum supply comes from recycled materials.

Energy saved using recycled materials vs. virgin ore:

- 92% for aluminum
- 90% for copper
- 87% for plastic
- 56% for iron and steel
- 68% for paper

Recycling one ton of:

- Paper saves 17 trees, 79 gallons of oil, 7,000 gallons of water, and 3.3 cubic yards of landfill
- Steel conserves 2,500 lbs. of iron ore, 1,400 lbs of coal, and 120 lbs. of limestone
- Aluminum conserves up to 8 tons bauxite ore and 14 megawatt hours of electricity

What types of scrap does CMC Recycling process?

There are two major categories of scrap:

- **Ferrous scrap** - Ferrous is an adjective used to describe metals that contain iron. Iron is the primary element in steel, but it is also alloyed with many other metals. Ferrous scrap metals are magnetic. In the scrap industry, ferrous scrap refers to steel, cast iron and other similar alloyed materials that are magnetic. These may include rebar, wrecked/old automobiles, cast iron washtubs, refrigerators, washers, and dryers
- **Nonferrous scrap** - Nonferrous metals are non-magnetic metals such as aluminum, brass, copper, and stainless steel. Nickel is a magnetic material in its pure form, but it is categorized with nonferrous materials.



Where does scrap come from?

Scrap metals come from manufacturers (industries), other scrap dealers, peddlers, and commercial and governmental sources.

- **Industries** are manufacturers of metal products that generate scrap as a valuable left over. For example, an industry that manufactures a product out of sheet steel will not normally be able to use 100% of the sheet. (See illustration, right.) They try, but unless the product they are cutting is the same shape as the sheet steel, they



will have waste. One of the services CMC Recycling offers to our industrial customers is that we will leave a container on the customer site for them to place the scrap into, and pick-up the container at the customer's convenience.

- **Scrap dealers** are people in the scrap business, but may not have the processing equipment or transportation services we offer. They collect scrap metal, and bring it to CMC Recycling for processing.



- **General public/peddlers** are people who make their living finding scrap metal and selling it to scrap dealers; or individuals who have, for example, accumulated aluminum cans to recycle, or cleaned out a garage. The minimum amount any CMC Recycling plant will accept is 200-lbs.
- **Commercial/Governmental** sources include wrecking yards, construction projects, demolition projects, bids (both governmental and commercial), railroads, farms, oil fields, utilities, auctions, and many others.

How is scrap processed?

Ferrous

Scrap yards that handle ferrous scrap use similar processing equipment. Ferrous scrap is either processed in a *shear*, a *baler*, a *shredder*, or is *torched*.

- The shear is used to cut scrap into lengths acceptable to the steel mill (usually around 3 feet).
- A baler (or press) squeezes, or densifies scrap into units acceptable to mills, or into loose *logs* that are then shredded in a shredder. Some yards have portable balers that travel to smaller yards to produce bales.
- The shredder shreds, or beats-up, scrap into small pieces using hammers flying around on a rotor, powered by a large horsepower electric motor. (See photo, right)
- Like the shear, torching consists of cutting ferrous scrap into smaller units, using a simple acetylene torch. Ferrous scrap that cannot economically be sheared, baled, or shredded is torched.



Left to right:
Portable shear, HRB (high reduction baler), a CMC Recycling torch operator.

Nonferrous

The primary piece of nonferrous processing equipment is the baler. The nonferrous baler is different than the baler used to process ferrous scrap. Other nonferrous processing equipment includes the alligator shear, metal cleaning shear, and briquetter. The purpose of most processing equipment is to reduce, or densify material to a size sufficient to ship economic loads, and to meet the specifications of our consumers.

A wire chopper is a complete processing business unit dedicated to processing insulated copper and aluminum wire, and a few other items. It has machines that granulate insulated material into very small particles, and then separates the metal from the plastic using gravity tables. The end product is called *chops*. (See illustration, right.)

