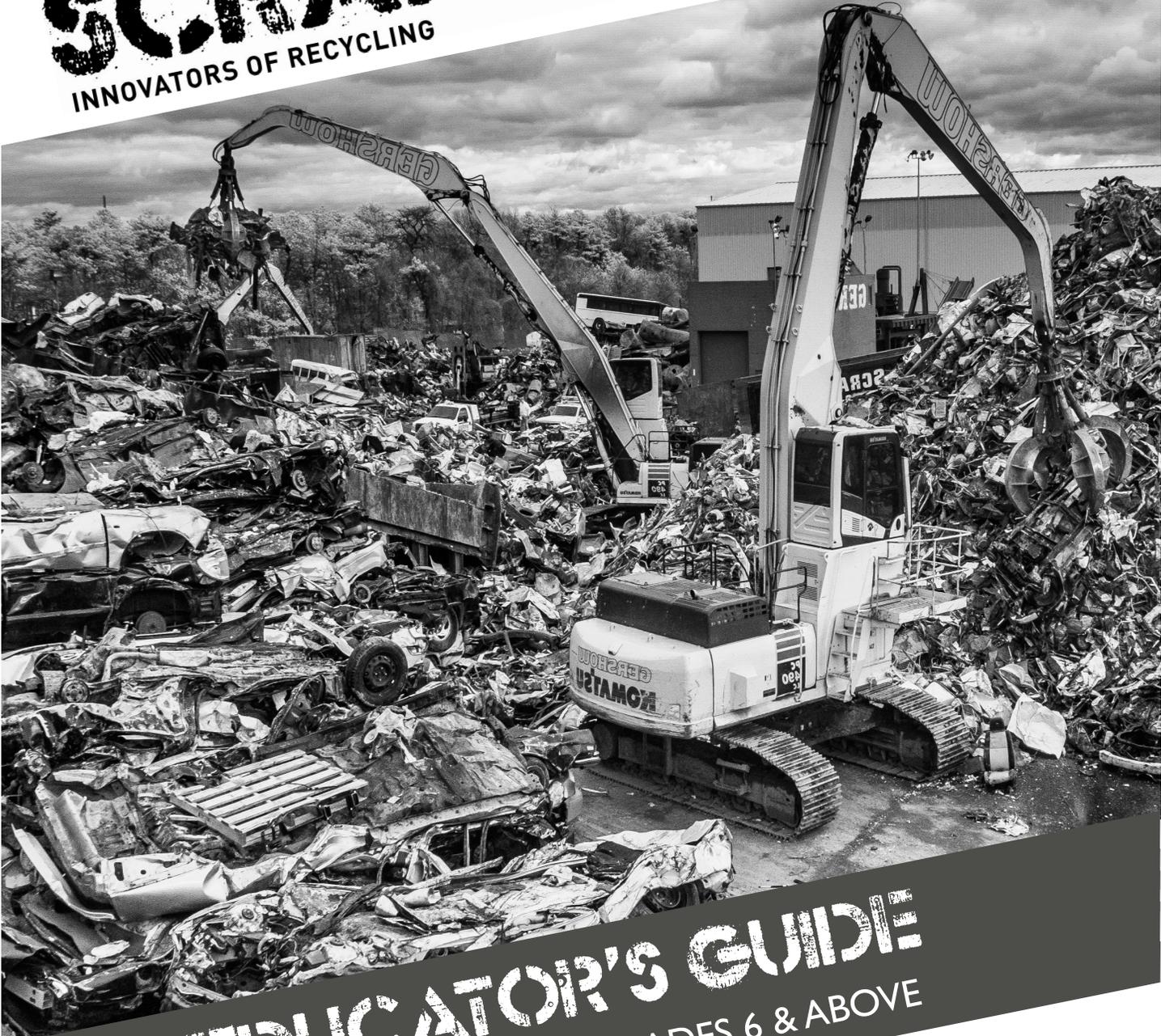


SCRAP YARD

INNOVATORS OF RECYCLING



EDUCATOR'S GUIDE

RECOMMENDED FOR GRADES 6 & ABOVE

Jewish  Museum
OF MARYLAND
Herbert Bearman Campus

JewishMuseumMd.org



facebook.com/jewishmuseummd [@jewishmuseummd](https://twitter.com/jewishmuseummd) [@jmm_md](https://www.instagram.com/jmm_md)



AN AGENCY OF
The Associated
Inspiring Jewish Community

BEFORE YOU VISIT

- Please read through these materials. Activities in this Guide were designed for grades 6 – 12.
- Please use the classroom activities and resources to help prepare your students.
- Review the glossary of terms with your students.

TABLE OF CONTENTS

Curricular Connections	3
Background Information	4
Classroom Activities; Before You Visit	5
Classroom Activities: After You Visit	8
Glossary	10
Thanks.....	11

ABOUT

Scrap Yard: Innovators of Recycling tells the important role that people, many of them Jewish immigrants, had in creating the scrap industry. It also tells the story of how almost everything that becomes worn, useless, or obsolete can be changed into something useful again. Through hands-on activities, students will experience the sights and sounds of one of America’s largest industries, its innovative technology, and the stories of the immigrant families that built it.

This Educator’s Guide contains background information on the scrap industry, curriculum connections, and classroom activities to support your visit to the JMM. Please tailor this Guide to best fit your students’ learning and classroom needs.

LEARNING OBJECTIVES

- To introduce students to the idea that scrap is not trash, but a valuable resource.
- To teach students about the role of Jewish and non-Jewish immigrants in creating the scrap industry.
- To explore the scrap industry’s relationship with the environment.
- To introduce students to how the demands of scrapping led to technological innovations.
- To illustrate the international scale of the scrap industry.
- To simulate the experience of strategically buying and selling scrap and to demonstrate basic economic principles.

CURRICULAR CONNECTIONS

We want to support your classroom learning. Please let our team know what you are studying in class and we will work together to create a visit that reinforces and explores those topics further. Our *Scrap Yard: Innovators of Recycling* education program and Educator's Guide explores topics of **immigration, recycling, economics, and Baltimore history**, while strengthening skills such as **strategic thinking, teamwork, interpreting primary sources, and creative thinking**.

Jewish History Connections

Jewish Immigration to the United States 1880s-1930s
Economic Challenges Facing Jewish Immigrants in America
Jewish Innovators and Entrepreneurs

Jewish Values Connections

Achrayut – Social Responsibility
Bal Tashchit – Do not Destroy
Bitachon – Confidence
Netzach – Perseverance and Grit
Roeh et HaNolad – Foresight
Yetzirah – Creativity
Zerizut – Zeal

L'Dor V'Dor Jewish Environmentalism

Learn more about a variety of Jewish organizations seeking to educate and inspire people to protect this planet and its natural resources for generations to come.

Hazon: Called “the Jewish lab of sustainability,” Hazon strives to create “a movement which strengthens Jewish life and contributes to a more environmentally sustainable world for all.”

<https://hazon.org/>

The Pearlstone Center: Founded in 1982 in partnership with The Associated in Baltimore, the Pearlstone Center and its staff “connect people to the land, so they value the connection between both; Adam and Adamah” and “embody, teach and inspire the practice of environmental sustainability.”

<https://www.pearlstonecenter.org/>

Jewish Museum of Maryland: Scrap Yard: Innovators of Recycling Website: An extension of the *Scrap Yard: Innovators of Recycling* exhibit, the Jewish Museum of Maryland's Scrap Yard website seeks to compliment your experience with further details and additional resources about the history of the scrap industry, its technology, and those that dedicated their lives to making discarded items into new products.

<https://www.scrapyardexhibit.org/>

BACKGROUND INFORMATION

WHAT IS SCRAP?

Scrap is not waste, trash, or garbage. Rather, it is worn out and obsolete products – old cars, bicycles, ships, refrigerators, empty bottles, packing materials, or clothing – that can have value after they served their original purpose. Scrap can come from places such as your house, favorite restaurant, neighborhood supermarket, school, the demolition of old buildings and bridges, and hospitals, to name a few.

Scrap can be divided into several commodity groups: ferrous scrap made out of iron or steel, such as cars and machinery; nonferrous scrap made out of metals like aluminum, lead, and copper, such as pipes; electronic scrap such as old cell phones and televisions; and nonmetallic scrap such as paper, rubber tires, and plastic.

WHAT IS THE SCRAP CYCLE?

Did you know that everything you touch becomes part of the scrap cycle?

The scrap cycle begins when you recycle a worn-out or obsolete item. From your recycling bin, it is collected, weighed, and sold to a recycling processing center where the item will be transformed back into its original materials. At the recycling processing center, the first step is to sort all of the scrap into commodity groups. Then, the scrap is processed into smaller components using a variety of tools, such as shredders, shears, and balers. Now broken down into smaller forms, the scrap is sold to manufacturers, such as steel mills, foundries, paper mills, and fabricators where it will be turned into new products.

EARNING A LIVING IN A NEW HOME

For many immigrants to the United States in the 19th and 20th centuries, trading in scrap materials was the only way to make a living because the job required little English or starting money. These scrap collectors, peddlers, and dealers traveled across North America bartering goods for scrap as they went. They could be heard bellowing for rags and metal in city streets and seen buying materials on farms. They carried their haul in sacks or wagons, and they relied on hand tools for breaking objects apart to salvage materials. Their work was demanding and their hours long. As scrap businesses grew, their founders invested in ways to process more material. By the early 20th century, many scrap operations had grown into expansive industrial sites.

THEN AND NOW

A scrapper of the 19th century would hardly recognize the scrap industry of today. What were once small lots often located next to the scrapper's home are now massive, sprawling scrap yards. Back then, scrappers relied on three tools: a pair of alligator shears, a wheelbarrow, and their own two hands. Today, the scrap industry uses balers, shredders, cranes, and trucks to make the industry more efficient and profitable. One thing, at least, remains the same: the entrepreneurial spirit, ingenuity, and adaptability of those who dedicate their lives to making worn-out, obsolete, and discarded items into new products.

CLASSROOM ACTIVITIES: BEFORE YOUR VISIT

VOCABULARY GRAFFITI

The *Scrap Yard: Innovators of Recycling* exhibit uses domain-specific vocabulary from the scrap industry. Prepare your students to engage with this exhibit by practicing the vocabulary before visiting. Vocabulary Graffiti asks your students to make an illustration of the vocabulary word while incorporating the word into the image.

1. Explain the concept of vocabulary graffiti to your students.
2. Assign each student a word and its definition from the glossary in this Educator’s Guide.
3. Have students individually research their word and create a piece of vocabulary graffiti for their word.
4. Ask students to share and explain their vocabulary graffiti with the class. Make sure to share your students’ artwork with the JMM’s social media pages!

EARNING A LIVING IN A NEW HOME ARCHIVAL EXPLORATION

Throughout history, immigrants came to America for a wide variety of reasons. One of these reasons was to seek economic prosperity in the land where “the streets were paved in gold,” but for many immigrants the only opportunities were in difficult jobs demanding in both their time and labor. Learn about five different industries in which new immigrants historically found employment through this primary source driven archival exploration.

1. Divide your class into five small groups and give each group one of the photographs and the corresponding questions sheet from the Earning a Living in a New Home Archival Exploration Resource Packet ([Separate PDF Download](#)). **Do not tell your students which industry their photograph portrays.** Then ask students to analyze the photograph and complete their corresponding questions sheet.
2. Then give each group their corresponding “About Photograph #” worksheet and have the students read the provided secondary source material and answer the questions on the worksheet.
3. Ask students to write a diary entry as though they were an immigrant in the United States working in their industry during the 1920s. Students should address what their job entails, the workplace conditions, the benefits and challenges, why they found work in this industry, and what skills and values they need.
4. Ask students to share their diary entries with the class.

TECHNOLOGY OF THE PAST, PRESENT, AND FUTURE SCRAP INDUSTRY

Originally starting with just cloth sacks and human labor, the scrap industry has incorporated and even created new technologies to improve its capabilities and efficiency. Learn about the variety of tools at the scrappers' disposal in the past, witness the equipment of today, and envision the technologies of the future through the primary and multimedia sources in this activity.

1. As a class, watch one of the videos under the Transforming Old to New: The Scrap Cycle header below and ask your students to write down the different technologies they saw in the video.
2. Direct the students to the “Thens and Now” section of the Jewish Museum of Maryland’s *Scrap Yard: Innovators of Recycling* website (**ScrapYardExhibit.org**). Have each student select one of the eight technologies on the website and have students individually explore their section of the website to learn how their technology has evolved over time. Then students should answer the following questions: Why is my technology integral to the scrap industry today? How did changes to my technology influence the scrap industry?
3. As a class, watch one video from the Changemakers: Today’s Innovators in the Recycling Industry header on page 7.
4. Bring the class together and ask the students to brainstorm what challenges the scrap and recycling industry is facing today that might be solved by new technological innovations in the future (such as non-biodegradable Styrofoam).

Transforming the Old to New: The Scrap Cycle

Aluminum: <https://www.youtube.com/watch?v=KmMP67eC2tg>

Cars: https://www.youtube.com/watch?v=rQ-b2OWzs_w

Plastic: <https://www.youtube.com/watch?v=xnutJRokix0>

Paper: <https://www.youtube.com/watch?v=2c8YxMb0tlk>

E-Scrap: <https://www.youtube.com/watch?v=uFSeFR9Tijis>

Changemakers: Today's Innovators in the Recycling Industry

Mr. Trash Wheel: After seeing an immense amount of trash in the Baltimore Inner Harbor coming from the Jones Falls, John Kellet and Daniel Chase invented Mr. Trash Wheel, a solar powered water wheel to collect the waste. <https://www.mrtrashwheel.com/>

- Overview: https://www.youtube.com/watch?time_continue=1&v=RkQbcrzyAeE

Ocean CleanUp: Founded by Boyen Slat at the age of 18, the Ocean CleanUp project strives to create new technologies to reduce the plastic in the Great Pacific Garbage Patch. <https://theoceancleanup.com/>

- About the Ocean CleanUp: https://www.youtube.com/watch?v=PFwHcr_FMw8
- How the Ocean CleanUp Technology Works: <https://www.youtube.com/watch?v=OIEAeNdTFHU>

Recycling the Unrecyclable: Ashton Cofer and his FIRST Robotics team wanted to find a way to recycle the unrecyclable: Styrofoam. After many attempts and adults telling them it was impossible, this team of high schoolers found a solution.

- Recycling Styrofoam: https://www.ted.com/talks/ashton_cofer_a_young_inventor_s_plan_to_recycle_styrofoam?language=en

Repair Cafes: What if, instead of throwing broken items away, we repaired them? This is the core of the Repair Café movement started by Martine Postma. An international movement, Repair Cafés call upon local community members to share their skills to help fix what is broken for free. <https://repaircafe.org/en/>

- Repair Café in New York: <https://www.youtube.com/watch?v=e5xRDhqGJCA>

The Seabin Project: Andrew Turton and Pete Ceglinski wondered “[i]f we can have rubbish bins on land then why not have them in the water,” and so the Seabin, a trash can for the ocean, was born. So far, over 700 Seabins have been installed worldwide. <https://seabinproject.com/>

- How the Seabin Works: <https://www.youtube.com/watch?v=ySp7HKD7jaw>

Washed Ashore: Angela Haseltine Pozzi and her organization, Washed Ashore, create larger-than-life sculptures of sea creatures using scrap found along the Oregon Coastline with the hopes of raising awareness about plastic pollution in the Pacific Ocean. <https://washedashore.org/>

- Washed Ashore Sculptures in DC: https://www.youtube.com/watch?v=wNEJhPj_yUY
- Making a Sea Dragon: <https://www.youtube.com/watch?v=HbvXo0VCCkQ>

Air INK: Anirudh Sharma wanted to find a way to both decrease pollution in the air and reuse materials. His solution was to create ink out of the dark particulates produced by the diesel engines common in his country of India. <http://www.graviky.com/>

- Making Air INK: https://www.ted.com/talks/anirudh_sharma_ink_made_out_of_air_pollution

CLASSROOM ACTIVITIES: AFTER YOUR VISIT

GLOBALIZATION IN THE SCRAP INDUSTRY

A water bottle recycled in the United States might be turned into new fabric in a factory in China. Learn about the global scale of the scrap industry today and the benefits and consequences of this interdependence in this data driven activity.

Globalization is the growing interconnectedness and interdependence of the world's economy.

1. Ask students to think-pair-share what they believe the term “globalization” means. After clarifying the term, then ask students to brainstorm which industries have become increasingly globalized and then share with the students that they will be investigating the global scrap trade.
2. Divide students into as many as eight groups and assign each group one of the resources in the Globalization in the Scrap Industry Resource Packet ([Separate PDF Download](#)). Then have each group watch the video corresponding to their resource from the What Can Be Scrapped? Header below. NOTE: Zinc, Copper, Nickel, Aluminum, and Lead should all watch the Nonferrous Metals video.
3. Then give each group their corresponding Import/Export tables from the Resource Packet, and ask students to make two graphs, one tracking the top five importers of their material from 2013 – 2017, and one tracking the top five exporters of their material for the same years.
4. Ask students to report to the class which countries are their top five importers and top five exporters of their material and keep track on the board how many times each country is in the top five importers/exporters. Then with this data, have the class determine which countries are consistently importing or exporting the most scrap materials.
5. Show students the Institute of Scrap Recycling Industries, Inc. 2017 World Scrap Trade Export Flow table from the Resource Packet. Ask students to identify which scrap commodity was the most lucrative in 2017 and which countries profited from the trade.
6. Ask your students: what happens to this trade network when one country eliminates its imports? Have students watch this short video from CBS News about China's new policies on importing recyclable scrap: <https://www.youtube.com/watch?v=F9hbbvdufd4>. Facilitate a class discussion based around the following questions: How has China's new policy impacted both the American scrap industry and average Americans? What solution(s) does the video propose? What are the pros and cons of a globalized scrap industry?

What can be Scrapped?

Nonferrous Metals: <https://www.youtube.com/watch?v=YeXkOSyqNRA>

E-Scrap: <https://www.youtube.com/watch?v=tKkPVqsxynM>

Plastics: <https://www.youtube.com/watch?v=R-hP2bICiWY>

Paper: <https://www.youtube.com/watch?v=ZNcP3sWUE4o>

Ferrous Metal: <https://www.youtube.com/watch?v=cZIsOcXG8cQ>

Rubber Tires: <https://www.youtube.com/watch?v=Asf8v4voEuY>

DESIGNING WITH RECYCLING IN MIND

Recycling a product begins, not with the consumer's recycling bin, but with the product's design. Manufacturers are beginning to see themselves as part of the scrap cycle and are now thinking about their product's end of life recyclability before it is even made. Through this activity, students will learn about how designing products with recycling in mind can benefit the scrap industry and the environment.

1. Watch Andrew Dent's TED Talk entitled "To Eliminate Waste, We Need to Rediscover Thrift," and afterwards explain to your students that thrift can also be called "designing with recycling in mind."
2. Have students read the Institute for Scrap Recycling Industries, Inc. (ISRI) Design for Recycling® principles, which describe four concrete steps manufactures can take to make their products recyclable at the end of their life.
3. Tell your students that they are now going to become the manufactures of a product, and they are looking to design the next version with recycling in mind. Divide the class into five separate groups and assign each group one of the products in the Schmutz: The Unrecyclable header below. Have each group watch/read the corresponding article/video listed for their product to research how it is currently made.
4. Have students brainstorm how they might improve upon the manufacturing process of their product based upon the ISRI Design for Recycling® principles. Students should also create a company mission statement outlining why they want to design their next product with recycling in mind.
5. Have each group present their new manufacturing process with the class, and facilitate a discussion about what students can do today and in the future to help make products more recyclable and sustainable.

Schmutz: The Unrecyclable

T-shirt: https://www.youtube.com/watch?v=BiSYoeqb_VY&t=140s

Pizza Box: https://www.youtube.com/watch?v=d_Q6yuR4PZc

Plastic Bags: <https://www.youtube.com/watch?v=kwuBfgvfUC4>

Coffee Cup: <https://www.cnn.com/interactive/2019/02/business/starbucks-cup-problem/index.html>

Smartphone: <https://www.latimes.com/business/technology/la-fi-tn-lithium-battery-recycle-20180912-story.html>

Designing with Recycling in Mind

To Eliminate Waste, We Need to Rediscover Thrift: In this TED Talk from "leading expert on sustainable materials," Andrew Dent, learn about how manufactures in a variety of industries are looking to design with recycling in mind. https://www.ted.com/talks/andrew_dent_to_eliminate_waste_we_need_to_rediscover_thrift?language=en#t-616477

Institute of Scrap Recycling Industries, Inc. (ISRI) Design for Recycling® Principles: ISRI has outlined four principles to designing with recycling in mind: "Making Consumer Products Recyclable...Reducing Environmental Risks from Consumer Products...Controlling Special Environmental Problems...[and] Assistance to Manufacturers of Consumer Durables." <https://www.isri.org/about-isri/awards/design-for-recycling>

MILTON WOLF PRIZE

Inspired by the entrepreneurial spirit and sustainable mindset of the 19th and 20th century scrappers and recyclers? Participate in Centropa's Milton Wolf Prize which charges students to "investigate a problem in their community, research the resources that exist for addressing that problem, and create a video or other presentation... that educates their community about the problem and how they can help address it."

Be sure to check out The Mount Washington School's winning submission about Baltimore's Mr. Trash Wheel here: <https://www.centropa.org/border-jumping/school/baltimores-trash-wheel-addressing-community-problem-trash-our-waterways>

GLOSSARY

Baler: A pressing machine designed to bring together loose pieces of cardboard, paper, plastic or other *scrap* materials into a neat and manageable shape. This aids in the transportation and reuse of materials in the *recycling* industry.

Electromagnetic Crane: Used to pick up and move objects and piles of material containing steel and iron. An electromagnet hangs from the arm of a crane and uses a magnetic field created by an electric current to lift *ferrous scrap*.

Environmentalism: A way of thinking and acting that seeks to balance the interconnections of human activity with the needs of animals, plants, and non-living matter.

Entrepreneurship: The process of creating a new business. A person who creates a new business is known as an *entrepreneur*.

E-Scrap: Discarded electronic products, also referred to as E-waste.

Ferrous Metal: Metal *scrap* that contains iron and is usually magnetic

Immigrant: A person who permanently moved from their country of birth to another. Many people involved in the *scrap* industry were or are immigrants.

Innovation: To create a new idea, method, or device. It can also mean a change made to an existing product, idea, or field.

Landfill: A site for the disposal of waste materials by burying waste into the ground, also known as a dump.

Non-Ferrous Metal: Metal that does not contain iron and is not magnetic.

Peddler: Someone who sells *scrap*, used items, or small objects along the street or door-to-door.

Rag: *Scrap* textiles, such as cotton, wool, and synthetic materials, ready to be reused in new products.

Raw Material: An unprocessed natural resource.

Recycling: The process of turning trash into new products. Sometimes called *scrapping*. The aim of *recycling* is to decrease the waste of useful materials and to reduce air and water pollution.

Scrap: Left over materials from manufacturing processes or consumption. Scrap is manufactured into valuable commodities that are used to make new products. Scrap is also sometimes referred to as junk, waste, trash, or garbage by those not in the industry.

Scrapper: An individual who works in the *scrap* industry. A scrapper collects recyclable materials and may supply them to a scrap dealer for sale or sell the scrap themselves.

Shears: A tool for cutting metal.

Shredder: Piece of machinery that reduces all manner of materials (paper, plastics, metals etc.) into smaller strips of material.

Sorting: Separating *scrap* materials by type.

Sustainability: A practice where both manufacturing and consumers work to preserve and protect natural resources. Sustainable practices support ecological, human, and economic health and vitality.

Torch: A handheld tool that produces a flame. Torches are used to cut *scrap* into smaller sizes.

Upcycling: A process of reusing 100% of a *scrap* material.

Waste Reclamation Service: This organization was created as part of the War Industries Board in World War I. It promoted the idea of conservation and salvage by ordinary Americans at home to combat wartime shortages

THANKS

**THIS EXHIBIT
IS MADE
POSSIBLE, IN
PART, BY THE
GENEROUS
SUPPORT OF:**

Institute for Museum and Library Services
National Endowment For The Humanities
Boston Metals Co. in Memory of Morris Schapiro
The Institute of Scrap Recycling Industries
David Berg Foundation
Baltimore Scrap: David, Larry, Ken, and Joe Simon
Liebherr
The Gershowitz Family and Gershow Recycling
Integrated Shredder Technology

Diamond State Recycling Corporation
Arnold and Joyce Fruman
The Sandy Shapiro Charitable Fund
Sue and Jerry Kline

Deborah Zager, in loving memory of my father, Sammy Kahan, founder
of Ansam Metals Corporation
Ray Aizen, Maryland Core, Inc.
Pinkert Family Foundation
Melvin A. Lipsitz Family Foundation
J. Solotken & Company
Ellen Kahan Zager and Jack Zager Philanthropic Fund
Robin Wiener and Roger Nehrer
Davis Industries
Howard Fields, in memory of my Pinkert grandad and uncles
ScrapWare Corporation

Dan Pinkert and Freddi Greenberg
Brian Shine, Manitoba Corporation
Kripke Enterprises
Neal Shapiro
Dale Pinkert
Anonymous

