

RECYCLING LESSON PLAN

SUBJECT

SCIENCE – LIFE SCIENCE
30-45 Minutes

GRADES

EIGHTH – TWELFTH

RECYCLE RIGHT *Lancaster* ✓



BACKGROUND for Teachers:



WHO IS LCSWMA?

[LCSWMA \(Lancaster County Solid Waste Management Authority\)](#) is a municipal authority in charge of managing municipal solid waste (MSW)—or what most people think of as household trash—and recyclable materials for Lancaster County homes and businesses, as well as MSW for the City of Harrisburg and the surrounding Dauphin County communities.

LCSWMA owns and operates four facilities:

- [Transfer Station Complex](#) (1299 Harrisburg Pike, Lancaster)
- [Lancaster Waste-to-Energy Facility](#) (1911 River Road, Bainbridge)
- [Frey Farm Landfill](#) (3049 River Road, Conestoga)
- [Susquehanna Resource Management Complex](#) (1670 South 19th Street, Harrisburg)

Between all four facilities, LCSWMA manages more than 1 million tons of waste each year. Additionally, LCSWMA is recognized nationally for its leadership in the solid waste industry and its innovative [Integrated System](#), which includes a county-wide recycling program.

Our mission is to manage waste as a resource to protect and benefit our community. Our goal for the Recycle Right Lancaster initiative is to keep curbside recycling sustainable in Lancaster County by supporting local municipalities and providing ongoing education to the community.

WHAT IS RECYCLING? It's a continuous cycle that requires three key steps:

1. **HOUSEHOLDS:** Consumers buy/use products, after which they separate these items into recyclables or trash.
2. **RECYCLING PROCESSORS:** Recyclables are sorted at materials recovery facilities (MRF) and sold to manufacturers.
3. **MANUFACTURERS:** Buyers turn recycled commodities into new products, driven by consumer demand.

CONTAMINATION CRISIS

Recycling has become an important part of our society. As it's grown in popularity over the years, contamination rates also increased. Contamination occurs when materials are placed in the recycling bin that don't belong. This came to a head in 2018 when China, the world's primary market for purchasing recycled commodities, banned imported recyclables due to high contamination rates. This change caused a major disruption in the recycling process around the world and prompted LCSWMA to overhaul our program in Lancaster County. For more information, visit recyclerightlancaster.org.



BACKGROUND for Teachers:



RECYCLING PROGRAM OVERHAUL

To keep curbside recycling sustainable, LCSWMA developed a solution to **reduce contamination in the curbside bin AT HOME**. This included simplifying the recycling process for people and focusing on four types of materials that are easily separated at the MRF and have a strong market for buyers who want this material to make new products:

1. Corrugated cardboard (like shipping and packing boxes)
2. Plastic bottles and jugs with necks (like water bottles or detergent bottles)
3. Metal food and beverage cans (like soup cans or soda cans)
4. Glass bottles and jars (like pasta sauce glass jar or wine bottle)

We call these materials the “BIG 4”. Only these materials should go into the recycling bin. Ignore the chasing arrows (“recycling”) symbol, as it’s only a communication tool and doesn’t mean a product is recyclable.

For more information on how to recycle each of the Big 4, click on the instructional videos below or visit recyclerightlancaster.org to access the videos online:

- [How to Recycle Cardboard at Home](#)
- [How to Recycle Plastic at Home](#)
- [How to Recycle Metal at Home](#)
- [How to Recycle Glass at Home](#)

CONNECT WITH US ON SOCIAL MEDIA

We’d love to see your recycling education in action!

Tag LCSWMA in your photos on these social media channels:

- Twitter: [@LCSWMA](#)
- Instagram: [@LCSWMAPA](#)
- Facebook: [Lancaster County Solid Waste Management Authority](#)



OBJECTIVES & Standards:



STUDENTS WILL UNDERSTAND THE FOLLOWING:

1. Recycling only the “Big 4” materials will help keep recycling sustainable for future generations.
2. Recycling helps the environment and protects natural resources.
3. Students will understand the recycling process and be able to identify the natural resources materials were made from, and what they are made into.
4. Students will identify items that can be recycled from those that cannot.
5. Students will learn to identify recyclables by shape, not number.
6. Students will be able to Recycle Right at home and educate family members.

Educational Standards (SAS-Standards Aligned System):

1. 4.5.8.C. Describe how humans can reduce pollution.
2. 11.1.9.A. Analyze current conservation practices and their effect on future renewable and non-renewable resources. Reduce, reuse, recycle.
3. 4.3.10.A. Evaluate factors affecting the use of natural resources.
4. 4.3.12.A. Evaluate the advantages and disadvantages of using renewable and nonrenewable resources.



Content/Lesson:



1. Introduce the lesson by asking the introduction discussion questions (See Page 5). Facilitate discussion to get students thinking about recycling.
2. Hand out "Vocabulary Sheet", "Can you Recycle It?" worksheet, "Discussion Questions", and "The Recycling Process" worksheet to students.
3. Have students fill out "Can you Recycle It?" worksheet to measure their knowledge before the lesson.
4. Play "Recycling Jeopardy" Game.
 - a. Open PowerPoint Attached
 - b. Split class into 2-4 groups, take turns picking categories/points
 - c. Group with most points at the end, wins!
 - d. Review "Can you Recycle It?" worksheet to correct any mistakes after learning the proper way to dispose of items.
5. Have students return to their desks and have them work with a partner on the "Discussion Questions" worksheet. Review as a class and use "Discussion Questions Answer Key" to explain the correct answers.

Intro Discussion Questions:

Use the following discussion questions to introduce the recycling changes.

1. Play intro clip to the “Big 4”(0:41): <https://youtu.be/E9t7VZeNtys>
 - a. Also found on RecycleRightLancaster.org
2. Ask students if they have heard about the changes to recycling. If so, how many have changed their behavior at home?
3. Ask students “Why do we recycle?”
4. Ask students what they think happens to the recycling after they place it in the bin.
5. Ask students what natural resources were used to create recyclable products?
 - a. Glass
 - b. Metal
 - c. Corrugated Cardboard
 - d. Plastics





Discussion Questions Answer Key



Have students work with a partner to answer the following questions. Then, discuss as a group and discuss the following correct answers.

Q: What items can you place in a curbside recycling bin?

A: Only the “Big 4” can be recycled in Lancaster County. The guidelines changed in 2018 to only the following items: corrugated cardboard, glass bottle and jars, plastic bottles and jugs with a neck, and metal food and beverage cans.

In order to keep recycling sustainable, we must only recycle the “Big 4” to prevent trash from getting in the recycle bin. An increase in contamination, otherwise known as trash, in the recycling bin makes it harder for processors to create a new product from the old product.

Play this video to explain the Big 4: (<https://www.youtube.com/watch?v=2rjd3CtgBCM>)

Q: Why do we recycle?

- We recycle to conserve energy and natural resources.
- Recycling helps waste reduction, meaning less trash to dispose of.
- Recycling a product requires far less energy than creating it from natural resources and prevents the use of fossil fuels to mine that natural resource.
- Water conservation also is important, as recycling saves water use from when the natural resources are extracted.

Q: What does it take for something to be recycled? What happens to it after it leaves the curb?

A: For a product to be recycled, it must be bought as raw material to create a new product. There must be a market for that material for it to be turned into something new.

The recycling process explains how an item is recycled. **Review “Recycling Process Worksheet”.**

Consumers must purchase items with recycled content or made from recyclables in order to keep the process going.

Q: What natural resources are we conserving if we buy products made from recycled materials?

A: The Big 4 materials all require natural resources in order to be made.

- Glass-Silica Sand & Limestone
- Corrugated Cardboard- Trees
- Metal- Aluminum, Iron Ore, Manganese
- Plastics-Petroleum & Crude Oil

Discussion Questions:

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Work with a partner to answer the following questions:

Q: What items can you place in a curbside recycling bin?

Q: Why do we recycle?

Q: What does it take for something to be recycled? What happens to your recyclables after they leave the curb?

Q: What natural resources are we conserving if we buy products made from recycled materials?



STUDENT HANDOUTS



Discussion Questions

1

Work with a partner to answer the following questions:

Q: What items can you place in a curbside recycling bin?

Q: Why do we recycle?

Q: What does it take for something to be recycled? What happens to your recyclables after they leave the curb?

Q: What natural resources are we conserving if we buy products made from recycled materials?



The Recycling Process:

HOW RECYCLING WORKS



The Recycling Process must occur for something to be “recycled”. Without a manufacturer buying the sorted recycled material and turning it into something new, an item cannot be recycled. Because of changes in the recycling industry, many items no longer have an end market.

Example: Strawberry container (Clamshell) does not have a manufacturer who wants that specific type of plastic.

recycling*noun*

The process of reclaiming raw material or reusing them to create new products.

sustainable*adjective*

Act responsibly about the products we use or throw away in order to save natural resources and protect the environment.

contamination*noun*

Any item in the bin that is not the “Big 4”. This includes trash and other products people “think” are recyclable.

corrugated cardboard*noun*

A box with a fluted sheet (ex: shipping box).

natural resource*noun*

Something found in nature such as water, minerals, soil, plants.

CAN YOU RECYCLE IT?



Identifying items that can be recycled in a curbside bin, special drop off recycling, and just trash can be hard. Some items can be recycled, just not in the curbside bin. For those special items, please check Earth911.com to see if they can be recycled at a drop off location. Other items are just trash!

Place an “X” in the category the item/product falls under.

Item/Product	Recycling Bin “Big 4”	Drop-Off Location	Trash Can
Junk Mail			
Water Bottle			
Packing Peanuts			
A Mirror			
Yogurt Container			
Soda Can			
Cell Phone			
Amazon Box			
Salad Takeout Container			
Jelly Jar			
Soup Can			
Broken Phone Charger Cord			
Gatorade Bottle			
Plastic Hairbrush			
Cereal Box			
Bottle Caps			
Newspaper			
Bike			
Pots and Pans			
Pizza Box			
Old TV			
Detergent Bottle			
Plastic Bags			
Magazines			

TAKE HOME ACTIVITY & MATERIALS





RECYCLING @ HOME AUDIT



Directions: Look inside your curbside recycling bin at home and record the following items.

1. How many items were “Big 4” items?
2. How many items were just trash?
3. What percentage of your bin is contaminated (trash)?
4. What was the most common item in your recycling bin?
5. Does your family know how to Recycle Right?
6. How will you continue to Recycle Right?

Bonus Challenge: Educate family members of the changes to recycling. Decrease your contamination level to 0% in one week. Were you able to reduce contamination to 0% by the end of the week, or did your family members keep placing trash in the bin?

FAQS:

Q: Why did the guidelines change for curbside recycling?

A: To address the contamination issue in Lancaster County, and ensure curbside recycling is sustainable, LCSWMA went “back to the basics” with four material types that have a strong domestic market—meaning, there is a demand for this material by manufacturers in the U.S. We call these materials the “Big 4” and include: 1) corrugated cardboard (like shipping and packing boxes), 2) metal food and beverage cans, 3) plastic bottles and jugs with a neck, and 4) glass bottles and jars.

Q: Where can I take items that are recyclable but shouldn't go in my curbside bin?

A: Some items, like newspaper, cereal boxes, and plastic bags, can be recycled but should not go in your curbside recycling bin. If you think something could be recycled, please visit earth911.com to verify if there is a drop-off location near you. If you aren't sure, please discard the item in your trash. Placing material in the recycling bin in hopes it will be recycled is “wishful recycling” and adds to the contamination crisis.

Q: What happens to the items I put in the trash? Do they go to the landfill?

A: Fortunately, in Lancaster County, material placed in the trash does not go to a landfill. LCSWMA owns two waste-to-energy (WTE) facilities where trash is combusted and turned into renewable energy. In fact, 1 in 5 Lancaster County homes are powered by trash!

Resources:

- www.Recyclerightlancaster.org
 - Info on recycling and more FAQ's
- www.lcswma.org
 - Info on the Lancaster County Solid Waste Management Authority's Integrated System, or how we manage 1 million tons of waste per year in Lancaster County.

