

# Elementary Waste Reduction Curriculum



Salt Lake County Recycling

# Introduction

This Waste Reduction Curriculum was designed to teach 2<sup>nd</sup>-5<sup>th</sup> graders who reside in Salt Lake County about the Salt Lake Valley Landfill, the issues it is facing, and what can be done to extend its life (reduce, reuse, and recycle).

This curriculum includes an introduction that gives the reader a brief background on each topic, followed by a 20 minute lesson. We mention touring the landfill in this curriculum, for more information on our free tours please [click here](#).

You are welcome to utilize this curriculum however you see fit. You could do 5, 20 minute lessons each day for a week, dedicate a day to it, or even just pick the recycling lesson.

We recommend you explore our website for more information. You are welcome to call us at 385-468-6370 or email us at [recycle@slco.org](mailto:recycle@slco.org) if you have any questions.

## Thank you!

Note: If you would like to print this curriculum, make sure to select "Booklet Printing" under Page Scaling and print on both sides!

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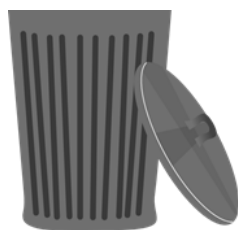
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## Day 1: Where does the garbage go?

### Introduction:

#### **Dumps vs. Landfills**

There is an ongoing assumption that dumps and landfills are the same. To address this issue, their differences need to be clarified. As it will be explained on the landfill tour, before landfills existed there



were dumps. Dumps were simply large holes where garbage was dumped and buried. Dumps laid no protective layers, leading to soil and groundwater contamination which are threats to human health. As a result, landfills were created.

To protect the soil and groundwater, the landfill layers are as follows (see figure 1, from the bottom up):

- Clay Liner
- Geosynthetic (plastic) Liner
- Leachate (garbage water) Collection System
- Protective Layer
- Garbage
- Impermeable cap
- Final cover



Figure 1

### What is the problem?

Landfills throughout the country are filling up faster than expected. Although the Salt Lake Valley Landfill is projected to close in 2065, it may close sooner due to the large influx of garbage daily (2.2 million lbs. a day). Population projections for Salt Lake County are the highest in the state, suggesting that the daily amount of garbage received at the landfill will increase unless something is done. There is no more room in Salt Lake County for another landfill, meaning the garbage would have to be transported longer distances, which could translate to higher hauling costs for the county residents.

Another issue with landfills is that items do not decompose or breakdown. 50 year old newspapers have been removed from landfills that are still legible. If we practice reduce, reuse, and recycle, our impact on the landfills will be greatly reduced.

## Lesson Example:

What is garbage?



Where does it go?

1. Trash can
2. Big trash bin
3. Garbage truck
4. The landfill



We no longer use dumps, we now use landfills! Before we used to dig holes, put our garbage in, and buried it, but that caused some problems. Have you ever dug a hole in the ground? Did you ever put water in that hole? Did it stay there? Where did it go? That's what was happening at dump sites! Our groundwater and soil became contaminated and made people living near dumps sick. Now we have landfills that have to follow rules to protect our groundwater and soil from contamination. Landfills are built with the following layers:

- Clay Liner: we dig a hole, not too deep so that it is a safe distance away from the groundwater, and fill it with clay.

- Geosynthetic Liner: then a geosynthetic (plastic) liner is placed on top to stop anything from percolating through
- Leachate (garbage water) Collection: These pipes are there to suck out the garbage water so that it doesn't contaminate the soil and groundwater.
- The protective layer: This layer, which is usually clay, acts as another protection layer.
- Garbage: then the garbage gets laid out, crushed and covered daily. You will see this happen when we take our trip to the landfill.
- Dirt: Every day we cover the 2.2 million pounds of garbage we receive with 6 inches of dirt.
- Impermeable cap: This cap is placed once the landfill completely closes—for the SLV Landfill that would be in about 50 years. Impermeable means that no sun, air, or water can get through this layer. These elements are needed for decomposition, or the breaking down, of materials. This means that once a landfill is capped, items will take a very long time to break down.
- Final cover: The final cover is usually vegetation. When we visit the landfill, you will see what an old landfill can turn into!

Over the years, the way we handle our waste has improved, but what are some issues?

Salt Lake County Landfill receives 2.2 million pounds of waste every day! But with the population of Salt

Lake County being one of the fastest growing in the state, do you think the amount of waste is going to stay the same or increase? Also, there's no room in the county for another landfill. Once this one fills up and shuts down, we will have to transport our garbage really far. For that to happen, we will have to pay more for our garbage to be taken care of. Wouldn't you want to spend your money in a different way instead of paying more for your garbage? There are three things that we can do to reduce our landfill impact, do you know what they are?

List of possible activities to include with the lesson (optional):

- Assign a “waste journal”. Have students record what they throw away (both in garbage can and recycling bin) for the class day, a 24-hour period, or longer, depending on the grade level of students.
- Use a banana or orange peel as an example for decomposition in a landfill vs. out in the elements. Put the peel of chosen fruit in an air tight jar in a dark place within the classroom and leave one out in the elements for the day (or in a jar without a lid near a window) and compare the difference.
- Create a landfill using a fish tank or have each students (or in groups) create their own using 2 liter soda bottles.



## Day 2: The Three Rs: Reduce

### Introduction:

In efforts to reduce our waste stream, the three Rs were conceived. To emphasize the importance of each R, we have split the lesson into three days, dedicating a lesson to each R. Something to keep in mind is the order of the three Rs; they are in order of importance. Recycling is great, but not creating trash in the first place is even better.

### **Reduce**

The first R, reduce, is the most important of the three because it means not creating waste in the first place. To do that, we have to pay attention to our lifestyle choices. We live in a throw-away society—everything has its disposable counterpart. As previously stated, 2.2 million pounds of garbage are buried in the landfill every day. Reducing does not only lower our landfill impact, but our whole environmental impact. This is because to make those throw-away materials it takes the extraction of our natural resources—which takes an incredible amount of energy and causes environmental damage.



### **Waste Reduction: Purchases**

In today's world we must make purchases to survive, but we can purchase wisely. Choosing items with less packaging or recyclable packaging over others makes a difference in the amount of trash we generate.

### **Waste Reduction: Free Items**

Sometimes when things are free, we tend to take items that we will not be using or that we already have. When free items are offered at an event, festival or other occasion, only take things that are needed or will be used more than once.

### **Waste Reduction: Food Waste**

40 percent of all food produced in the United States gets thrown away.

Organic waste, organic referring to anything that was once living, causes other problems at a

landfill than filling it up. When organic waste decomposes anaerobically (without oxygen), it releases methane gas. Methane is a greenhouse gas that is 25 times more potent than carbon dioxide.



At Salt Lake Valley Landfill we extract the methane that is released from decaying organic waste, convert it to electricity, and use it heat close to 3,000 homes in Murray. Although this is a great thing, it would be much better if there was not as much methane in the landfill that needed special handling.

### **Other changes that make a difference**

- Taking only one paper towel when drying hands
- Only using one paper napkin or using a cloth napkin instead
- Eating everything on the plate, not taking more food than will eaten
- Eating leftovers
- Choosing to use real cups, cutlery, and plates over paper and/or plastic
- Using less paper and using both sides
- Using reusable items such as:
  - Reusable water bottles
  - Tupperware
  - Canvas shopping bags
  - Using a reusable lunch bag instead of a plastic bag

## Lesson Example:

Do you guys remember what we talked about yesterday? Where does our garbage go?

What can we do to reduce the amount of waste that goes to the landfill?

(Reduce, reuse, and recycle!)

What does reduce means?

It means to use less, or to create less garbage. The order of the 3 Rs are very important. Reducing is listed first because not creating waste in the first place not only saves landfill space, but also conserves our natural resources. Making items that we use in our everyday lives requires the processing of our natural resources. Natural resources are things that are naturally occurring on earth. Some examples of natural resources are air, water, soil, minerals and plants. Plastics are made from natural resources.

What are some plastic products that we use often?

- Water bottles
- Plastic bags
- Cups/plates/cutlery
- Packaging



How can we reduce our plastic consumption?



- Reusable water bottles
- Canvas shopping bags
- “real” cups/plates/cutlery

- Buying thing with the least amount of packaging.

Can you think of another resource we use to make things what are disposable? (Trees!) What things do we make from trees that we just throw away?

- Paper
- Paper towels/toilet paper/napkins



How can we reduce how much paper we consume?

- Use both sides of a piece of paper
- Don't print papers unless it's absolutely necessary
- Use only one paper towel to dry hands
- Take only one napkin or use a cloth napkin
- Use a cleaning rag instead of paper towels whenever possible



Another natural resource we consume (literally) is food! Do you know what happens to food that doesn't get eaten? It ends up at the landfill! Food waste is a problem in our landfills because... Do you guys remember what happens when a landfill is covered? (No oxygen, sunlight or water can penetrate through). With no oxygen aiding in decomposition, or the breaking down, of food, it releases a greenhouse gas called methane that is 25 times more potent than

Carbon Dioxide (CO<sub>2</sub>).  
That means that it is  
able to absorb 25 times  
more heat than CO<sub>2</sub>.



What can we do to  
reduce our food waste?

Eating everything on your plate! And only taking  
what you can eat!

List of possible activities to include with the  
lesson (optional):

- Have a “Zero Waste” day in class. Have students make an effort to reduce the amount of things they throw away.
- “Which would you buy?” game, pitting products with more and less packaging against each other and have students choose which they would buy. The goal: to create the least amount of waste.

## Day 3: The Three Rs: Reuse

### Introduction:

The second R, reuse, also comes ahead of recycling. Reusing means finding more purpose to something that would otherwise be trash. Because reusing things requires creativity, it is highly recommended to pair an activity with this lesson.

### **Thrift Stores**

It is worth mentioning thrift stores to students. Stores such as Savers, The Salvation Army and the DI are perfect examples of reusing and the saying “One man’s trash is another man’s treasure.” One can find a variety of items that have been used or even brand new, donated by people who no longer need them. Encourage students to visit their local thrift store first when needing to purchase an item and to donate no longer used clothes and toys.

### **What can they do?**

Before beginning the activity, lead a class discussion about items that are meant to be trash but can be turned into something that will have multiple uses.

Items such as:

- Toilet paper rolls
- Tin cans
- Egg cartons
- Shoe boxes
- Cereal boxes



- Old clothes if they are too worn to be donated
- Plastic containers (baby wipe tubs, butter containers, etc.)

### Lesson Example:

(Review the 3 Rs- ask students what they remember from reduce and why it's the most important R. Re-emphasized some points if needed.)

Today we're going to talk about the second R, which is...? Reuse! Reusing is our second attempt at reducing our landfill impact as well as our environmental impact. Reusing means using something that would be trash after one use, again.

Let's say one day we forget our refillable water bottle at home but we are thirsty, so we buy a plastic water bottle. When we are done drinking the water from it, instead of throwing it away, what can we do? We can refill it and use it for the rest of the day.

What about tin cans? What can we do with those?

-Shoe boxes?



-Butter containers?



-Cereal boxes?



-Toilet paper rolls?





What about clothing, what can we do with it when we've outgrown it? We can donate it to places like Savers, the DI, Salvation Army, and any other thrift store near you. Before buying new items, check out these places first. Buying used items saves the natural resources!



What if clothing is too worn to be donated? We can use it as cleaning rags, so now we are not only reusing, but we're reducing too.

List of possible activities to include with the lesson (optional, but highly recommended):

- Collect (can also have parents donate) a good amount of one item (such as cereal boxes, toilet paper rolls, tin cans, etc.) and have students get creative and turn them into something else in class (set time limit if needed). Have a “show and tell” if time allows.
- A quick activity can be decorating tin cans and turning them into pencil holders students can use throughout the year.
- Have a toy swap. Have students bring a toy from home that they no longer play with and swap with other students.

## Day 4: The Three Rs: Recycle!

### Introduction:

Recycling is the last effort in reducing the amount of waste that will end up at the landfill. Recycling breaks down items to its building blocks to create brand new items. Unlike reusing, recycling requires much more effort and processing. Recycling is important because materials are being reused instead of extracting brand new materials, which is a more extensive process.

Recycling rules often vary from state to state due to the differences in recycling facilities. Our local recycling facility is Rocky Mountain Recycling and these rules are based on what they can accept.

### **3 Main Types**

Paper, plastic and metal are the 3 categories of items that can be discarded in a recycling bin. Items do not need to be washed, just empty. Paper products cannot be soiled (i.e. pizza boxes). [Glass](#) has to be dropped off at designated locations.

### **Easy guide to recycling:**

- Plastic bottles, tubs, jugs, and jars (shampoo bottles, butter tub, milk jugs, peanut butter jars, etc.)



- Paper and cardboard (Junk mail, egg cartons, tissue boxes, cereal boxes, etc.)



- Aluminum cans, steel cans, and other metals



Items that are not recyclable although they “sound” like they could be recycled:

- Paper towels—fibers are too short to be recycled
- Styrofoam—local MRF does not accept
- Straws—too small
- Food wrappers—contain multiple materials
- Paper cups/plates—plastic lining

Additional items that do not belong in the recycling bin, but can be recycled at the [SLV Landfill](#) and [Trans-Jordan Landfill](#) all year long:

- Household hazardous waste
- Electronics
- Appliances
- Light bulbs



The [SLCo Health Department](#) holds collections throughout the year for these items as well.

We invite you to check out our [Hard to Recycle](#) page on our website to find out where to recycle those items that do not belong in your recycling bin, such as plastic bags.

**Just because it is recyclable...**

It does not justify using more. Although recycling is great, we must remember that it is the last resort. Just because a plastic water bottle is recyclable, it does not mean that it's good to buy a new one every day.

Refilling a reusable water bottle will always be better than buying many new plastic water bottles.

### Lesson Example:

(Ask students if they remember the three Rs and what they remember from the first two. Re-emphasize points if needed.)

What do you guys remember about the first two Rs?

Today we will be talking about the 3rd and final R, which is recycle! Recycling means breaking items down to its building blocks and making different items from it. Imagine making a castle out of Legos then completely breaking it down and then making boat. Recycling is kind of like that. We can make many different things from recycled materials. With recycled plastic, we can make things like flooring, chairs, tables, and even fabric!

Remember how we talked about the importance of the order of the 3 Rs? Recycling is the last one, so that means after we have already tried the first 2 Rs, reducing and reusing, recycling is the last resort.

Like a disposable water bottle—our first effort is to not buy it in the first place and use a refillable water bottle. When we forget our refillable water bottle and have to buy a plastic one, instead of just throwing it away, we can refill it and use it for the rest of the day. Then at the end of the day, or when we are done reusing it, we can recycle it.

There are 3 main types of materials that we can recycle, what are they?

### 1. Plastics



Recycle all plastic containers. All bottles, tubs, jugs, and jars. Bottles like water bottles and shampoo bottles, tubs like the container

butter comes in, jugs like milk jugs, and jars like peanut butter jars. Plastics like straws and food wrappers are not containers therefore they're not recyclable.

### 2. Paper



Paper and cardboard are also recyclable. Homework paper, cereal boxes, toilet paper tubes, etc. Can paper towels be recycled?

What about paper cups? Those items cannot be recycled! They are processed differently so they are able to perform the job they're meant for, and sadly they are not recyclable. That's why reducing how many of these items we use is best!

### 3. Metals



Metal is the third type of item that can go in your recycling bin.

Aluminum cans that sometimes our sodas come in, tin cans that beans and tuna comes in and other metals of the sort can be recycled. But remember, some of these things can be reused before they are recycled!

An item type that can be recycled but is not allowed in our curbside recycling bin is glass. Glass can be dropped off to be recycled at designated drop off locations (insert drop off locations in your area here).



There are also items that do not belong in either your recycling bin or your trash can. They are called household hazardous waste. This includes items like cleaners, pesticides and electronics. These items need to be taken to places where they will be disposed of properly. At Salt Lake Valley Landfill you will see that we have an area that is run by the Health Department where we properly handle these hazardous wastes.



List of possible activities to include with the lesson (optional):

- If your school doesn't already have one, consider starting a Green Team.
- As a class, decorate a or multiple (depending on how your school recycles) recycling bins
- Make posters that show recyclable items vs. non-recyclable. Big or small; ones that could go on or above a recycling bin.
- At the landfill: after the education portion of the landfill tour, students will be taken to the tipping face (the area where all the garbage is unloaded). Have students point out or write down items they see in this area that could have been recycled instead of thrown away.
- Play a "Is this recyclable?" game
- Hold a trash audit! Have students dump out the classroom's trash can and have them pick out (with gloves on) the recyclable items.



## Day 5: Review

Take this opportunity to briefly review everything the students learned in the last 4 days, including how a landfill works, why the 3 Rs are important and why their order matters.

Teaching new generations to be intelligent and responsible consumers is important for the future of waste management and natural resource management. Before making a purchase, students should ask themselves these questions:

- Is there something I already own that I can repurpose?
- Do I really need this?
- Will I use it more than once?
- Can I reuse it?”
- Lastly, can I recycle it?

For a closing activity, as a class read *The Lorax* by Dr. Seuss. Ask students what the possible consequences are if we do not take care of the environment we live in and what would be the consequences if we take action and do take care of it. Emphasize on this quote from the book: “Unless someone like you cares a whole awful lot, nothing is going to get better. It's not.”