How to Go from Scientist to Food Rescue Action Hero!

THE AMAZING
GARBOLIST
ADVENTURE

STOP FOOD WASTE EDITION

STOP WASTE
at home • at work • at school
In this journal you will join four garbologists who ask questions about how garbage affects people living in Alameda County and around the world.

What in the world is a garbologist?
A garbologist is a scientist who studies garbage. Why study garbage? Because there is a LOT of it. And more is created every day!

Like other scientists, garbologists ask questions. They ask questions about garbage:
- Is it good for people?
- Is it harmful to people?
- Does it hurt or help the environment?

You opened this journal as a student, but now you are a garbologist! By the end of this journal, you will know what it takes to be a FOOD RESCUE ACTION HERO!

Super Reducer
Super Reducer’s Garbologist name is Redford.

Professor Reuse
Professor Reuse’s Garbologist name is RiRi.

Rot Girl
Rot Girl’s Garbologist name is Rhoda.

The Recycler
The Recycler’s Garbologist name is Reese.

Garbologist Journal

In the first column, K stands for Know, write what you know about wasted food. In the second column, W stands for Want to Know, write what questions you may have about wasted food. In the third column, L stand for Learn. At the end of your garbologist journal, fill out the last column to reflect on what you learned.

There’s more!
With this journal explores the problem of food in our garbage.

As you turn the pages, your garbology expertise about how to take action to stop food waste will increase! You will find out how to take action at school, at home and in your community!

And when you take action, you will transform into a Food Rescue Action Hero!
What a Waste!

How much food is wasted in the United States each year?
To find out, color the apples that have an even number on them.

I colored _____ apples out of _____ apples.
As a fraction, this would be: _____
Another way to say ½ is: _____

How much food does the average American family of four waste every month?
Here are the amounts of wasted food by food group.

Dairy: 22 lbs
Meat & Fish: 18 lbs
Fruits & Veggies: 24 lbs

It really adds up!
How many total pounds of food does the average American family throw away every month?

How many pounds of food does the average American family throw away in a year?

lbs.
lbs.

Source: USDA

Why would a garbologist want to know the number one item people throw away? Do you think wasting food is a problem? Why or why not?

Source: NRDC.org 2017

When we throw an item away, it ends up in a LANDFILL. Once in a landfill, it's called waste and that item can never be used again!

WRFT NOLKOVSD F

FOOD RESCUE FACT
40% of food in the U.S. is wasted each year. Wasted food is the number one item found in our landfills, a place where natural resources are lost forever.
Do You Throw Away Money?

“There are four people in my family. Take a look at the amount of food we threw out in one month. We multiplied the number of pounds of each food group by the average cost per pound. Can you complete the chart to show how much money we wasted in a year?”

– Reese

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Pounds (lbs) Tossed Each Month</th>
<th>Cost Per Pound</th>
<th>Total Money Wasted Each Month</th>
<th>Total Money Wasted Each Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits/Veggies</td>
<td>24 lbs</td>
<td>$2.00</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Dairy</td>
<td>22 lbs</td>
<td>$1.00</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Meat/Fish</td>
<td>18 lbs</td>
<td>$3.00</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>TOTAL</td>
<td>lbs</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
</tbody>
</table>

This is the amount of money Reese’s family spent on food that was wasted in one full year!

Garbologist Journal

What would your family do with an extra $1,500 each year if you stopped wasting food?
Wasting Food Wastes Water

How thirsty is your food? All of the foods we eat need water to grow. Some need a lot of water. Take a look at how much water it takes to grow some popular foods.

<table>
<thead>
<tr>
<th>Item</th>
<th>Water Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>one walnut</td>
<td>5 gallons</td>
</tr>
<tr>
<td>one almond</td>
<td>1 gallons</td>
</tr>
<tr>
<td>tomato</td>
<td>3 gallons</td>
</tr>
<tr>
<td>five strawberries</td>
<td>2 gallons</td>
</tr>
<tr>
<td>ten grapes</td>
<td>3 gallons</td>
</tr>
<tr>
<td>four pistachios</td>
<td>3 gallons</td>
</tr>
<tr>
<td>gallon of milk</td>
<td>880 gallons per pound</td>
</tr>
<tr>
<td>chicken</td>
<td>468 gallons</td>
</tr>
<tr>
<td>hamburger</td>
<td>660 gallons for a ½ lb burger</td>
</tr>
<tr>
<td>slice of bread</td>
<td>11 gallons</td>
</tr>
<tr>
<td>one egg</td>
<td>53 gallons</td>
</tr>
<tr>
<td>cheese</td>
<td>600 gallons per pound</td>
</tr>
</tbody>
</table>

LUNCH WASTE ALERT!

ATTENTION GARBOLIGISTS: Three students didn’t finish their lunch. All those uneaten lunch foods are now headed to the landfill! Do the math and find out how much water was wasted by food thrown away. Color a water jug blue for every gallon wasted.

STUDENT 1 Olivia

STUDENT 2 Kevin

STUDENT 3 Patel

Show your math below:

Garbologist Journal

Now you know that when we waste food, we waste water. What are some other actions you can take every day to save water?

FOOD RESCUE FACT

The average American consumes 300 gallons of California water each week by eating the food the Golden State produces.
Wasting Food Wastes Energy

It takes energy to grow and process the food you eat. Farmers use machinery to plow, plant and harvest food. It takes energy, time and labor to grow and harvest the food that livestock eats. It takes energy to transport food. Every step in the process of getting food to your plate takes energy.

There is a missed opportunity when we waste food – we could recover it and feed people who are hungry. In Alameda County, one out of three children don’t know where their next meal will come from. This is known as being food insecure. These children might even be your classmates, a neighbor, or could be you.

**Pie Chart**
This pie represents all the food we produce in the United States. Color four slices red. That represents the fraction of food Americans waste. Four out of 10 slices is the same as 40%.

Label the pie chart: **What We Waste** • **What We Eat**

---

Did you know that every step in the process of getting food to your plate takes energy?

---

**FOOD RESCUER FACT**
Every year, millions of tons of food are wasted. Scientists estimate that the energy used to grow, process and transport the food wasted in the U.S. each year is the same as wasting about 350 million barrels of oil! That’s about twice as much energy as all the people in Switzerland use in a year.

---

**Garbologist Journal**
One way to waste less food is to buy only what you will eat and eat what you ask for. Help whoever shops for food in your home by completing and giving them this letter.

Dear ____________________ ,
I want to stop wasting food. You can help by only buying the healthy snacks I will eat. The healthy snacks I eat are:

_________________________________________________________________
_________________________________________________________________

If I eat these snacks, I won’t waste food because they are my favorites.

When I don’t waste food, I am also saving resources like ______________________ , ______________________ , ______________________ .

Sincerely,
_____________________________
Food Waste and Global Climate Change

When wasted food goes to a landfill, it begins to rot. When it rots, it creates a gas called **methylene**.

When methane gas molecules are released into the atmosphere, they absorb heat and make more heat by heating up the molecules around them. When human actions create too many methane gas molecules in the atmosphere, the gas heats up our planet – this is called **global warming**. Global warming causes our climate to change.

Weather vs. Climate Change: What’s the Difference?

**Weather** refers to the condition of the air around us on a particular day or week. The weather may be cold or warm today.

**Climate** refers to the average or typical weather conditions in a region of the world. For example, polar bears live in the Arctic where the climate is very cold.

Weather reflects temperature over the course of a short amount of time. Climate is a measurement of temperature trends over a long period of time.

Garbologist Journal

As a garbologist, you now know more about the negative effects on our Earth when people waste food. Cast your vote below for the thing that motivates you the most to take action to become a Food Rescuer Action Hero!

- Wasting food wastes money.
- Wasting food wastes energy.
- Wasting food wastes water.
- Wasting food is wrong when so many people go hungry.

This is why I chose the above answer: ______________________________________

___________________________________________________________________

___________________________________________________________________

Taking action to stop food waste reduces global climate change and helps people and our planet!

Food Rescuer Fact

About 30 million tons of waste end up in California landfills each year. More than 30% of this waste could be used for compost or mulch.
Action Heroes to the Rescue!

Wasted food causes a lot of problems! Wasted food costs money. It wastes water. It wastes energy. It contributes to global climate change. And, because food is something people need to survive, food should feed people, not landfills.

When garbologists take action, they become Action Heroes who improve the lives of others. Food Rescue Action Heroes can take action at school, at home and in their community!

I'm Super Reducer! I show people how to use less stuff!

I'm Rot Girl! I show you how to compost food scraps, yard waste and food-soiled paper to build healthy new soil!

I'm Professor Reuse! I show people how to reuse things rather than getting new stuff!

I remind you to recycle stuff you no longer need, instead of trashing it. I'm The Recyder!

YOU can be an Action Hero, too!
Food Rescue Heroes Take Action at School

At school, we can be Food Rescue Action Heroes by …

**My Food Rescue Action Hero name is: ________________________________!**

---

**Food Rescue Hero Journal**

Now that you have become a Food Rescue Action Hero, the rest of the journal activities in this book are called Food Rescue Hero Journal!

---

**The Food Rescue Action Hero Plan**

**STEP 1:** Take Action at School

**STEP 2:** Take Action at Home

**STEP 3:** Take Action in the Community

---

**YOU as a Food Rescue Action Hero**

You can transform into a Food Rescue Action Hero, too! Draw a picture of yourself as an action hero on the Journal page below! What is your Action Hero name? What is your special power?

---

**Food Rescue Heroes Take Action at School**

**Being like Super Reducer:** I’m going to FEED MYSELF and eat what I take at the school lunch line!

**Being like Professor Reuse:** I’m going to FEED OTHERS at school by sharing unopened cafeteria food!

**Being like The Recycler:** I’m going to remind students to SHARE unopened food items!

**Being like Rot Girl:** I’m going to FEED THE SOIL and compost uneaten food and scraps!
Food Rescuers Take Action at School

In the photo below, Sequoia Elementary School student, Joey, makes sure only unopened, unbitten food is put on the Food Share Table. Joey wears a special green cape because he is on the school’s Green Team as a Food Rescue Hero!

Food Share Table Reduces Waste

OAKLAND – Sequoia Elementary School student, Sabrina, took her milk at the cafeteria, but decided she wanted water instead.

Sabrina filled her reusable bottle in the cafeteria and drank it all, so she didn’t open up her milk.

Her friend Juju had a special classroom birthday party, so she didn’t eat her yogurt she got from the cafeteria as she was full.

Today, Sabrina, Juju, and Adolpho put all “unwanted, still sealed or unopened, and unbitten” food from their cafeteria on their school’s Food Share Table. Instead of food going to the landfill, other students can enjoy nutritious food at no cost during mealtime and landfill waste is reduced.

Food Rescue Hero Journal

After reading the news article above, I was surprised that

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

Here’s why I think it would be a good idea to start a Food Share Table at my school:

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

I will take action by talking to ____________________________________ about starting a Food Share Table at my school or improving our existing one.
More and more schools are setting up Food Share Tables because they keep food out of the landfills. Instead, children can enjoy good, nutritious food at no extra cost.

What goes on the Food Share Table?
Food that is whole, uneaten or unopened can be placed on the Food Share Table. Use a green crayon to circle the foods that can go to the Food Share Table. Then, check your answers at the bottom of the page.

Answers:
Foods that can go on the Food Share Table are: Yogurt, apple, orange, milk, applesauce, sealed carrot packet and sealed bag of chips. The foods that can’t go on the table are: Banana that has been bitten, sandwich from home and the open box of raisins.
Food Rescuers Take Action at Home

How much food is going to waste in your fridge? Try a fridge food audit to find out. (Audit is a fancy way to say “count or measure something.”)

**REFRIGERATOR FOOD AUDIT SCORECARD**

**STEP 1:** Count how many total food items are in your fridge.

There are __________ items of food in my refrigerator.

**STEP 2:** Take out of your refrigerator anything that is spoiled, expired, moldy or looks or smells bad. Take out anything you don’t think your family is going to eat or drink *(make sure to ask permission, first!)*. Count how many of these items you remove from your fridge.

<table>
<thead>
<tr>
<th>VEGGIES</th>
<th>FRUIT</th>
<th>DAIRY</th>
<th>GRAINS</th>
<th>LEFTOVERS</th>
<th>OTHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SCORE YOUR FAMILY!**

None: GROCERY GREATS!  
1-2 items: SHOPPING STARS  
3-4 items: ROOM TO IMPROVE  
5-6 items: NEED A STRATEGY  
6-7 items: WASTE ALERT!  
More than 7 items: FAMILY MEETING!

**Food Reducer Math Challenge:** Figure out what fraction of the food in your refrigerator is wasted food.

Number of wasted food items: __________

Number of items in the fridge: __________

Fraction of food that is wasted: __________

Write as a percentage: __________

Source: USDA.gov 2015
**Grocery Shopping Takes a Team**

It takes everyone in your family working together to reduce the amount of food waste in your home day after day.

**Shopping when hungry?**

A 2013 Cornell University study showed that shopping when you’re hungry is a really bad idea. Participants in the study who were hungry bought more food, spending more money. But they also tended to choose more higher-calorie snack items than people who had eaten before shopping. Food for thought!

---

**Food Rescue Hero Journal**

Take action by analyzing your data: What patterns do you see that lead to wasted food? Here is a guide on common problems at home:

**Problem:**
- Forgotten food / Surplus
- Too much spoiled food
- Leftovers
- Rotten food

**Solution:**
- Plan for meals and make a sign to eat fresh food first!
- Store food properly!
- Eat everything you buy or bring home from eating out. Make leftover recipes!
- Compost spoiled food!

Based on our observations, my family and I will reduce wasted food in the future by:
- Planning our meals so we will buy only what we will eat
- Store our food better so it stays fresh
- Eat everything we buy
- Compost our scraps and spoiled food in the green bin

Other ways we could reduce wasted food at home:
- 
- 
- 
- 

---

**Food Rescue Action Plan**

Food Rescue Heroes PLAN their meals and make a SHOPPING LIST.

1. Before you shop, plan the meals you’ll cook at home and list the items that are needed.

2. “Shop” your refrigerator, freezer and cupboards for ingredients before you shop. Cross items you find off your shopping list before you leave home.

3. At the store, buy just enough for the meals you planned.

---

**SMART SHOPPER IDEA:**

Avoid using a shopping cart whenever you can. Why? It’s too easy to toss in extra food items. Instead, bring a small reusable shopping bag with you to gather only what’s on your list.
**Storing food properly keeps food fresher, longer!** And it’s one of the most important ways to avoid food waste.

**FOOD RESCUER FACT**

Your refrigerator temperature should be at or below 40°F (4°C). The freezer temperature should be 0°F (-18°C).

---

**Action Heroes’ Food Storage Game**

Super Reducer has a sidekick to help him. It’s a little reusable water bottle named ___    ___    ___    ___    ___    ___  !

1. Read about the correct way to store each food.
2. Find the place in the kitchen picture where that food should be stored.
3. Write the letters in each location on the lines above to spell the name of the mystery sidekick.
4. Draw the food where it should be stored in the Action Heroes’ kitchen!

---

**Bread**

Store in a breadbox, not the refrigerator. This keeps bread from drying out. Make sure to keep the bread sealed after taking slices out.

---

**Apples**

Store apples on the counter for up to 7 days. Keep them away from bananas and avocados, as those will speed up ripening.

---

**Potatoes**

Store potatoes in a cool, dark place at room temperature. Keep away from onions and add an apple to avoid early sprouting.

---

**Asparagus**

Trim the ends of asparagus and place them upright in a glass of water, just like cut flowers. Then place in the fridge.

---

**Herbs**

Don’t let herbs go to waste. Save them for later by making herb cubes in the freezer with oil or butter in ice cube trays.

---
Sometimes food goes bad because we forget it. In the back corner of the fridge, or in a dark cupboard, perfectly good food slowly goes bad because it has been forgotten and replaced with fresh food. Sooner or later, it winds up getting thrown out.

Here’s a good tip to keep food from being forgotten. Place an empty container in your refrigerator labelled, “EAT THIS FIRST.” Put food items that may go bad soon in that container, so that anyone who opens the fridge looking for a bite to eat, knows to eat that food first, while it’s still nice and tasty.

Visit StopFoodWaste.org for tips on storing other foods and make a Food Storage Card for each. Share your cards with your family.

You can download and print this sign to use in your fridge to reduce food waste. Visit StopFoodWaste.org to get it.

A “Sell-By” date tells how long a food item should be displayed in a store.

A “Best if Used By” date is the period of time of best flavor or quality.

A “Use-By” date, which is provided by the manufacturer, shows the recommended date the product is at peak quality.

These dates are guidelines and don’t necessarily mean the food has gone bad.

Visit StopFoodWaste.org for tips on storing other foods and make a Food Storage Card for each. Share your cards with your family.

Reducing food waste makes me feel __________________ .

It makes me feel this way because _________________________________________
___________________________________________________________________
__________________________________________________________________ .

I wish everyone knew the following about food waste: __________________________
___________________________________________________________________
___________________________________________________________________
__________________________________________________________________ .

Food Rescue Hero Journal

SMART STORAGE TIP
For food labelling keep a wet erase marker close by. Mark items with name of food, date made and date to be eaten by. Mark seasonings and dressings in glass with the date of purchase using a permanent marker.

Source: USDA 2016
Food Rescue Action Tool: EAT!

Food Rescue Heroes around the world reduce food waste by eating everything they have at home. Avoid wasting food by cooking with leftovers!

How to say “EAT” in Other Languages
Do the math to discover how to say the word “eat” in each language. Draw a line to connect each word with its language.

11 + 11 = French
21 - 7 = Tagalog
14 + 6 = German
9 + 10 = Spanish
23 - 10 = Polish
30 - 11 = Romanian
6 + 9 = Italian
mangiare = 15
mâncă = 19
manger = 22
essen = 20
comer = 19
kumain = 14
jesć = 13

LEFTOVER RECIPE-MAKING
Before those leftovers spoil, turn them into a tasty new meal! Here are two examples of student-created recipes made from leftovers.

PIZZA ON MY HEEL
Dried heels of bread turn into something yummy!
(Bread heels are the end pieces of sliced loaves of bread.)

INGREDIENTS:
• Leftover bread heels
• Shredded cheese
• Leftover pasta or tomato sauce
• Toppings you like

DIRECTIONS:
1. Toast the heel slices
2. Spread pasta/tomato sauce on the bread, heel side down.
3. Sprinkle cheese across the top. Add toppings if you want them.
4. Toast pizza in a toaster oven or under the broiler for 5 minutes.

Created by Christopher L.*

* These recipes were created by 9 to 13-year-old students on the Lightsabers Phoenix Squadron robotics team. Their cookbook is available free on Amazon.
**TACO MAC ’N CHEESE**

*Combine two favorite foods and get a third favorite!*

**INGREDIENTS:**
- Leftover taco meat
- Tortilla chip crumbs
- Leftover macaroni and cheese
- Sour cream and salsa (optional)

**DIRECTIONS:**
1. Mix macaroni and taco meat.
2. Microwave until warm.
3. Put a dollop of sour cream and/or salsa on top.
4. Sprinkle with tortilla chip crumbs.

*Created by Judah C.*

---

**Food Rescue Hero Journal**

*Create a leftovers recipe!* Make a new recipe from one of the groups of leftovers below so that everything gets eaten!

**Recipe name:** ____________________________________________________________________  **Created by:** _______________________

**Ingredients:** __________________________________________  **Instructions:** _______________________________________

__________________________________________  _______________________________________

__________________________________________  _______________________________________

__________________________________________  _______________________________________

__________________________________________  _______________________________________

__________________________________________  _______________________________________

__________________________________________  _______________________________________

__________________________________________  _______________________________________

__________________________________________  _______________________________________

Send your recipe ideas to schools@stopwaste.org and it may be chosen for a special feature on our website or social media.

---

**Soup it up!**

Make a broth rich in minerals from your vegetable scraps.

Collect scraps in a freezer bag until you have enough for a broth. About a quart-sized freezer bag should be enough. Be sure to clean them first and discard anything that is moldy.

Additions for flavor and nutrients include:
- fresh herbs
- garlic
- ginger
- peppercorns
- bay leaf
- shiitake mushrooms
- turmeric

Vegetable broth is good for up to a week in the refrigerator or freeze in ice cube trays and then store in freezer bags.
Composting turns food waste into healthy, rich soil for our gardens and farms to grow more fruits and veggies in the future!

Food Rescuers Take Action by Composting

In Alameda County, some residents get a special green bin for wasted food and yard trimmings. This waste is taken to a compost facility and decomposed into compost instead of going to the landfill. That means it won’t make methane gas.

What goes in the green bin?

- Peels, cores, partially eaten food that was once alive: fruit, vegetables, breads, cereal, dairy, meat (including bones); coffee grounds, paper filters and tea bags.
- Food-soiled paper: Paper towels, paper plates, napkins, pizza boxes and paper lunch bags.
- Not accepted: Plastic (bags and Styrofoam), glass, metal, and pet waste.

Why collect and compost food scraps?

- Food scraps and food-soiled paper make up the largest category in our landfill.
- Food scraps and yard trimmings collected from curbside bins are sent to a composting facility where they are turned into compost.
- Compost is a valuable resource used by landscapers, farmers, and gardeners. Compost improves soil quality, water retention, increases crop yield, and reduces the need for chemical fertilizers and pesticides.
- Food scrap composting reduces greenhouse gases. Food scraps that are not composted collectively emit more methane than any other material in the landfill.
In Alameda County, some residents get a special green bin for wasted food and yard trimmings. This waste is taken to a compost facility and decomposed into compost instead of going to the landfill. That means it won’t make methane gas.

Food scraps and food-soiled paper make up the largest category in our landfill. Food scraps and yard trimmings collected from curbside bins are sent to a composting facility where they are turned into compost. Compost is a valuable resource used by landscapers, farmers, and gardeners. Compost improves soil quality, water retention, increases crop yield, and reduces the need for chemical fertilizers and pesticides.

Food scrap composting reduces greenhouse gases. Food scraps that are not composted collectively emit more methane than any other material in the landfill.

Food Rescuers Take Action in Their Community

- Hoover Elementary students in Oakland grow and collect surplus food in a school garden to share with families and community members.
- Kids can start a food donation collection at school or in their community and donate to a food bank.
- American High School students in Fremont, take uneaten food from the cafeteria to a nearby shelter.

Dear Principal Browning,

I propose two ways to reduce food waste by at least 40% at Kolb Elementary. They are to serve hot lunch in smaller trays and to have play time before we eat lunch.

We can reduce food waste by 10% by serving hot lunch in smaller trays. Smaller trays make students feel like there is less food.

To prevent about 30% of the food waste at Kolb we can play before we eat lunch. After you play, you burn off a lot of carbohydrates and students will be hungry and not waste as much food. Also students will not feel that they are missing out on their play time. According to the Environmental Protection Agency (EPA), “Scheduling recess before lunch can reduce plate waste by as much as 30%.”

Please consider these strategies and implement them at Kolb, and possibly the rest of the schools in Dublin Unified School District. Thank you for your time in reading this letter!

Sincerely,
Pranav

Food Rescue Hero Journal

Write a Food Rescue Hero Letter
When students at Kolb Elementary School in Dublin, Calif., learned about the problems associated with food waste, they worked on ideas to reduce food waste at their school. The students wrote letters, like this one from Pranav, to their principal.

Read Pranav’s letter and then write a letter to someone you think should know about Food Waste.

Food Rescue Action Hero Promise

I promise to be a Food Rescue Action Hero everyday at school, at home, and in my community and teach others to do the same!

CONGRATULATIONS!
Thank you, Food Rescue Action Hero, for taking action!

Stop Food Waste Activity Journal is brought to you by StopWaste’s 4Rs Student Action Project
For more information on reducing food waste at home, at school, at work and in your community, go to StopFoodWaste.org
Created by Impact Creative Services, LLC

Stop Food Waste Activity Journal, Version 1 © 2018 StopWaste
WILL YOU JOIN THE LEAGUE OF STOPWASTE ACTION HEROES?

Want to learn more? StopFoodWaste.org