Heal the Bay

Ocean Heroes

ACTIVITY GUIDE

Become an Ocean Hero

This guide will teach you about our amazing water-covered planet and how what we do every day effects our oceans. Learn about the actions you can take to become a true **Ocean Hero!**

Table of Contents

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For a classroom set:
call (800) Heal Bay ext. 146 or download the guide at www.healthebay.org/ccd.

Ocean Heroes Activity Guide is made possible through a partnership of these organizations

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Santa Monica Pier aquarium Heal the Bay

52 SHARK WEEKS A YEAR.

FREE Admission for 12 and under!

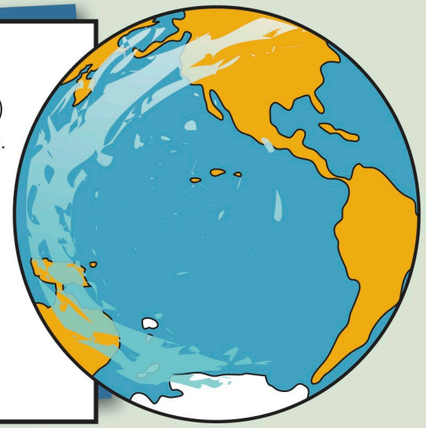
healthebay.org/aquarium

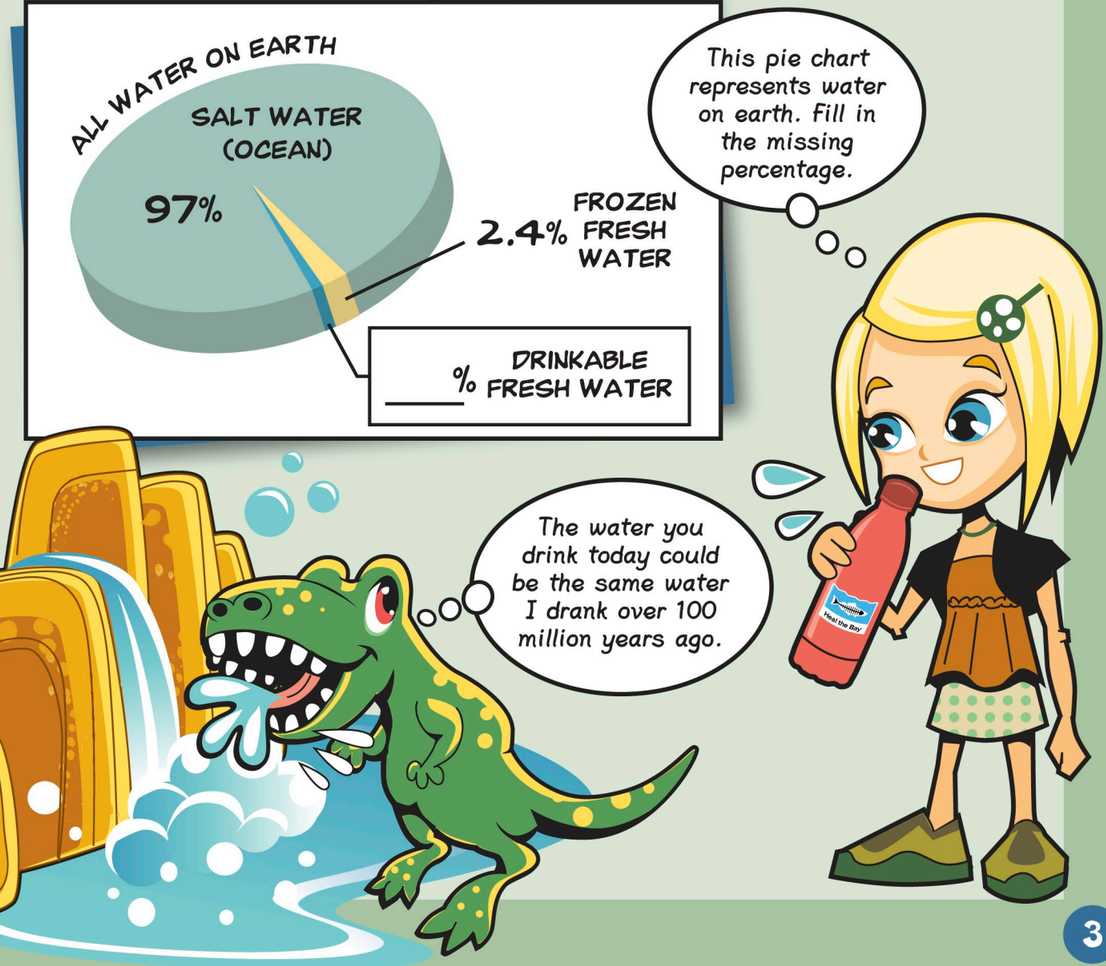
Mixed Sources FSC FPO

Water World

Water is Everywhere

Water covers the majority of the earth's surface (75%) and makes up the majority of the human body (70%). All of this water sounds promising; however, 97% of the earth's water is contained in the ocean as salt water, leaving only 3% as fresh water. Of that 3% fresh water, 2.4% is frozen in ice sheets, leaving less than 1% of our planet's fresh water in lakes, rivers or underground. That's less than 1% of fresh, drinkable water for over 7.5 billion people on earth. We can't afford to waste a single drop!





Why is the Ocean Important?

It's a joke! What does seaweed do in an emergency? It calls for KELP!!!

Water Water Everywhere

Water is important because every living thing on earth needs it to survive. The Ocean provides food, animal habitats, energy, transportation and recreation.

For example, a healthy ocean provides:
- 70% of the oxygen we breathe
- Protein for 3.5 billion people
- 3 million jobs in the United States

Ocean Animals are Remarkable!

Match the special skill listed below to the animal in the picture:

1. Male _____ protect their eggs in a pouch on their bellies until they are ready to hatch.

2. An _____ can camouflage by changing their skin color and skin texture to blend into their surroundings.

3. When it's time to lay their eggs, _____ return to the same nesting grounds where they were born.

4. The stomach of a _____ exits through their mouth to digest the food, and reenters the body when they're done eating.

Answers:
1. Seahorses 2. Octopus 3. Sea turtles 4. Seastar

Is Your Trash Going to the Ocean?

The Storm Drain System

Most of Los Angeles is covered with hard solid surfaces like parking lots, streets and rooftops. When rain falls on these surfaces it doesn't soak or infiltrate into the ground. This water is called **runoff**. Runoff that doesn't drain somewhere can become a flood. To prevent flooding cities built the **storm drain system**. Our rivers were replaced with concrete channels connected to a maze of underground pipes to move runoff from our streets to the ocean as fast as possible.

The storm drain system starts in our neighborhoods with an opening in the curb called a **catch basin**. On a sunny day, activities like washing our cars on the street, over-watering our yards, or hosing down sidewalks, also create runoff. Along its journey, runoff picks up trash like straws, food wrappers, cigarette butts and animal waste from streets and sidewalks. A lot of the trash is plastic and it flows through the storm drain system and empties into the ocean or dumps out onto the beach through a concrete pipe called an **outfall**.

Runoff from urban areas, carried by our storm drain systems, is one of the biggest sources of ocean pollution.

Top 5 Items Cleaned Up*

1. Cigarette Butts - **2,412,151**
2. Food Wrappers - **1,739,743**
3. Plastic Bottles - **1,569,135**
4. Plastic Bottle Caps - **1,091,107**
5. Plastic Grocery Bags - **757,523**

* Annually worldwide

You and Your Watershed

CALABASAS
WESTLAKE VILLAGE
ENCINO
VAN NUYS
SHERMAN OAKS
BURBANK
GLENDALE
LOS ANGELES RIVER
SANTA MONICA MOUNTAINS
WEST HOLLYWOOD
BEVERLY HILLS
PASADENA
MONROVIA
SAN GABRIEL MOUNTAINS
AZUSA
TEMPLE CITY
BALDWIN PARK
IRWINDALE
COVINA
WEST COVINA
ALHAMBRA
LOS ANGELES
MONTEREY PARK
RIO HONDO RIVER
CITY OF INDUSTRY
MALIBU
SANTA MONICA
CULVER CITY
BALLONA CREEK
MARINA DEL REY
INGLEWOOD
HUNTINGTON PARK
PICO RIVERA
WHITTIER
SANTA MONICA BAY
EL SEGUNDO
HAWTHORNE
DOWNEY
SANTA FE SPRINGS
MANHATTAN BEACH
COMPTON
LA MIRADA
DOMINGUEZ CHANNEL
LOS ANGELES RIVER
SAN GABRIEL RIVER
HERMOSA BEACH
ARTESIA
REDONDO BEACH
TORRANCE
LAKEWOOD
CARSON
LOMITA
LONG BEACH
PALOS VERDES
SAN PEDRO
SAN PEDRO BAY

101 5 210 134 405 10 110 105 710 605

LEGEND

- Ballona Creek watershed
- Dominguez Channel watershed
- Los Angeles River watershed
- San Gabriel River watershed
- Santa Monica Bay watershed
- Freeway
- Waterway (river, creek or channel)

What is a Watershed?

Everyone lives in a watershed. In fact you are sitting in one right now. A watershed is an area of land that drains downward through a series of creeks and rivers into a common body of water such as a lake or ocean. It is important to understand that wherever you live, the beach, the city, or the mountains, you are connected to the ocean! That means it's up to **YOU** to help keep your watershed clean.

Lets Find Your Watershed

1. Use the watershed map to find the name of your city and place a **star** where you live. If you can't find your city, use a freeway or a nearby city to help find your location.
2. Go to the legend and find your watershed.

My watershed is _____

and it drains to _____ Bay.

As you can see, we're all in this watershed together. No matter where you live we all have an impact on the ocean.

Journey to the Ocean

DIRECTIONS

You're a rain drop in the water cycle and you're trying to reach the ocean. Choose a rock, button, or other object to use as a game piece. Take turns flipping a coin to move along the paths. HEADS = 1 space, TAILS = 2 spaces.

Keep track of your pollution points along the way. When you reach the ocean, add up your points. The winner is the one with the **LEAST** amount of pollution points. Which path do you think is less polluted?

START

Fall in Park. Slide to the groundwater path.

Fall on concrete. Slide to the storm drain path.

GROUNDWATER PATH

Land in grass and soak into the ground.

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Absorbed by tree roots. **-1 pollution point**

Filter down through soil, gravel and clay.

Enter underground aquifer. Move foward 2 spaces.

Leaky oil tank pollutes groundwater. Lose a turn. **+2 pollution points**

Recharge drinking water. **-1 pollution point**

Leave aquifer through natural spring

Bubble up through floor of natural creek. Slide to ocean.

Concrete river channel covers spring. **+1 pollution point**

STORM DRAIN PATH

Land on sidewalk and runoff into the street.

Flow to gutter and pick up a cigarette butt! **+3 pollution points**

Soapy water from car wash flows into storm drain. **+2 pollution points**

Enter a catch basin and fall into storm drain system.

Join storm drain system. Move forward 2 spaces.

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CONCRETE CREEK PATH

Pipe discharges into creek. Slide to concrete creek path.

Illegal dumping in the creek. **+2 pollution points**

Oil dumped down catch basin. Lose turn **+5 pollution points**

Natural spring adds clean water. Move forward 1 space.

Dog owner doesn't pick up after pet. **+ 3 pollution points**

Sea turtle mistakes popped balloons for food. **+2 pollution points**

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Trash clogs outfall and causes flood. **+2 pollution points**

ENTER OCEAN

ENTER OCEAN

ENTER OCEAN

POLLUTION POINTS			
PLAYER 1		PLAYER 2	
(+)	(-)	(+)	(-)
TOTAL		TOTAL	

An aquifer is an underground area of rock, sand, or gravel that can hold water. Groundwater is held within an aquifer.

Pollution has Consequences

1 MISTAKEN IDENTITY:

When trash, like plastic bags and balloons, end up in the ocean, turtles, fish, birds and other marine life mistake it for food. If they eat enough plastic, their stomachs can fill up, tricking them into feeling full. Animals stop eating when they think they're full and can starve to death.

Ocean Food Imposters

Solve the problems to find the ocean food imposters. Place the letter on the line of the matching number.

8 x 2 = ☐ = P	3 x 4 = ☐ = L	6 x 5 = ☐ = F	7 x 3 = ☐ = N	9 x 9 = ☐ = S
4 x 6 = ☐ = G	8 x 7 = ☐ = Y	2 x 2 = ☐ = R	5 x 3 = ☐ = A	39 x 1 = ☐ = M
10 x 2 = ☐ = B	6 x 9 = ☐ = O	8 x 8 = ☐ = I	7 x 7 = ☐ = T	198 x 0 = ☐ = C

20 15 12 12 54 54 21 81

16 12 15 81 49 64 0 20 15 24 81

81 49 56 4 54 30 54 15 39

2 ENTANGLEMENT:

Animals can also get tangled up in trash like six-pack rings, ribbons and fishing line, which makes it hard to swim, fly, and eat. Imagine how you would feel to be trapped in trash. Try this game to find out. Place a rubber band on your left thumb. Pull it around the back of your left hand across your knuckles and loop it onto your pinky finger. Now using your left hand only, try getting the rubber band off. How many people in your class were able to get untangled? Were you?

3 HABITAT IMPACT:

As polluted water reaches the rivers, creeks, lakes and ocean, it modifies the natural habitat of the waterbody and changes the ecosystem function which is essential for maintaining healthy aquatic life.

4 BIOACCUMULATION:

Would you ever eat pesticides or cleaning products? **NO WAY**, that would make you sick. BUT, when those chemicals end up in the ocean fish and birds eat them by accident. The chemicals build up as they move up the food chain through a process called bioaccumulation.

What Can You Do?

Slash Your Trash

1. Don't litter. Put trash in the can.
2. Recycle and turn trash into cash. To find out how, visit www.consrv.ca.gov or call (800)-RECYCLE.
3. Refuse! Simply create less trash. Say no to straws and bags.
4. Reuse! Refill your water bottle and use grocery bags over and over.
5. Buy recycled products. Look for this symbol.

Carlos has a can he wants to recycle. Help him get to the recycle bin by correctly answering the questions along the way.

Most of the trash in the ocean is plastic.

FALSE

TRUE

In some parts of the ocean there is six times as much plastic as plankton.

TRUE

FALSE

How much marine debris in the ocean comes from land?

80%

20%

TRUE FALSE

California recycling centers pay 5¢ for every bottle or can you recycle.

TRUE

Plastic trash in the ocean never truly biodegrades.

FALSE

FALSE

Foam plates are durable and hard to break apart.

TRUE

Most plastic straws are not recyclable.

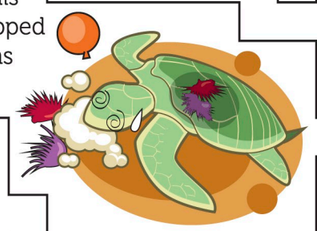
TRUE

FALSE

FALSE

TRUE

Marine animals can mistake popped party balloons for food.



FALSE

22 billion plastic water bottles are thrown in the trash each year.

TRUE

What Can We Do?

There are over 10 million people in Los Angeles County and if everyone picked up just one piece of trash it would make a **HUGE** difference.

The 4 R's

What are the 4 R's?

The 4 R's stand for **rethink, reduce, reuse,** and **recycle**. You can do many things to prevent pollution and save energy. Following the 4 R's makes it easy.

Rethink: Decline disposable plastic. Say "No Thanks!" to straws, utensils and styrofoam containers.

Reduce: Save precious resources by making an effort every day to lessen your use of extra plastic. It is the best choice!

Reuse: Bring a bag from home or your own water bottle and use it over and over again.

Recycle: Recycling plastic requires a lot of energy and not all materials can be recycled. Do your part to **rethink**, **reduce** and **reuse** first!

Do Your Part!

Fill in the blank with the missing **R**

Use it again and again

Decline disposable plastic

Use Less — Always the best choice

What items are Recyclable?

Most communities recycle clean, dry paper, aluminum cans, plastic bottles and glass. So look for a blue bin or a can with the chasing arrow symbol. If you can't find one call the County's recycling hotline at **1 (888) CLEAN LA**, or visit **www.888CleanLA.com**.

Conservation

Tips to Save Water & Keep it Clean

- Turn the water off while you brush your teeth.
- Take a 3-minute shower instead of a 5-minute shower.
- Turn off the water while soaping up your hands.
- When cleaning up your front yard, use a broom instead of a hose to prevent leaves, pesticides, and fertilizers from going down the storm drain.
- Before you throw anything on the ground, think about whether you would want to see it in your drinking glass (chewed gum, banana peels, motor oil -- yuck!).
- Check your house and school for leaky faucets.

Water Consumption Chart

WHAT YOU DO	WHAT IT TAKES	HOW MANY TIMES A DAY?	*TOTAL GALLONS
Flushing a toilet	**1.6 gallons**		
Shower avg. shower length____(min.)	**5 gallons/min.** (old shower head)		
	2.5 gallons/min. (new shower head)		
Taking a bath	**40 gallons** (if tub is full)		
Brushing teeth	**3 gallons** (water left running)		
	1 gallon (water turned off)		
Washing dishes	**10 gallons**		
Watering lawn	**40 gallons**		
Washing a car	**40 gallons**		

Water Wise Chart adapted from the Waves, Wetlands, and Watersheds: California Coastal Commission Science Activity Guide www.coastforyou.org

Water Use

The average person uses 33 gallons of water each day. Use the water consumption chart to find out how much water you use in one day.

*WHAT IT TAKES X HOW MANY TIMES A DAY = TOTAL GALLONS

You are well on your way to becoming an ocean hero – nice job!
Test your new superhero knowledge by placing the letter from
the pollution on the line next to the solution.

POLLUTION	SOLUTION
A Plastic bottles	_____ 1. Clean up after your pet.
B Helium balloons	_____ 2. Say "No thanks" and sip instead.
C Plastic six-pack rings	_____ 3. Pop them and put them in the trash.
D Trash on the ground	_____ 4. Don't litter, put trash in a trash can.
E Plastic straws	_____ 5. Flatten, put the lid back on and recycle.
F Pet waste	_____ 6. Cut them up before you throw them out.

Be an ocean hero! Match the pollution problem with the correct solution.

Ways You Can Heal the Bay

Heal the Bay Can Help You Keep Our Ocean Clean!

Have a free speaker come to your class to talk about ocean pollution

www.healthebay.org/education

Find out about fun family events like beach cleanups & aquarium activities at

www.healthebay.org/calendar

Heal the Bay

Hey 3rd - 5th Graders

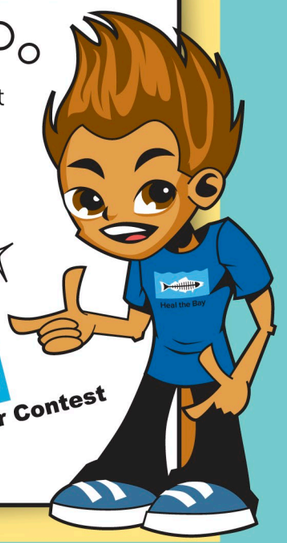
Did you know the ocean begins at your doorstep? No matter how far we live from the beach, our pollution ends up in the ocean, yikes!

Help us stop ocean pollution:

- Learn about ocean pollution by going to our poster contest website; beaches.lacounty.gov/postercontest
- Share what you've learned! Draw a picture about how we can keep our oceans and beaches pollution-free and healthy. Be creative!
- Then enter your drawing in our poster contest for a chance to have your message shared with millions of beachgoers! Be sure to ask an adult for help.

beaches.lacounty.gov/postercontest

Contest winners will have their artwork displayed on trash barrels on the beach.



Enter the CAN THE TRASH! Clean Beach Poster Contest

The Department of Beaches & Harbors supports the Ocean Heroes Activity Guide solely as an educational tool for its Can the Trash! Clean Beach Poster Contest and not as an endorsement for any other entity or initiative.

KNOW THE FUTURE OF WATER.

What can I do to ensure a resilient water FUTURE?

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