

# Lesson 7: Healthy Water Inside





# Lesson 7: Healthy Water Inside

## Snapshot

This lesson examines water in our homes with a focus on how our tap water is treated and how to conserve water. Avoiding mold and mildew is also addressed.

### Preparation and Materials:

- Posters 1–4, Visual Card 1, Take-Home Talk
- 6 magnifying glasses
- 6 clear plastic cups
- Flip chart and markers
- Black or white board
- Pond, puddle, or aquarium water—some water in which the students will be able to see things (dirt, sticks, etc.) with and without the magnifying glasses. **Teacher Note:** this activity isn't effective with tap water or bottled water. The students need to see unfiltered water from outside—a puddle or a bucket filled with water and left outside for a week or so will work if you don't have access to a stream, pond, or lake.
- 6 Report-Out sheets
- 6 pencils

**Suggested Giveaways:** Stickers to remind students to turn off the water, a water canteen

### Objectives—Students will be able to:

- define *mold*, *mildew*, and *fluoride*;
- list three ways to stop mold and mildew from growing;
- explain how water is treated; and
- explain some ways to conserve water at home.

**Vocabulary:** mold, mildew, fluoride, and potable

### Procedure:

1. Introduction (5 minutes)
2. Water Detective Activity (15 minutes)
3. Water Travels (10 minutes)
4. Conserving Water (5 minutes)
5. Avoiding Mold and Mildew (5 minutes)
6. Close and Take-Home Talk (5 minutes)



# Lesson 7: Healthy Water Inside

## 1. Introduction

(5 minutes)

Review

Ask several students to share something that they remember from the previous lesson.

**Prompts:** What did you learn that you didn't know before? What did we talk about that you already knew? What surprised you from our last lesson? What are some of the new words that you learned from our last lesson? What can you do to positively impact the issue we learned about?

Ask

We've talked about how we need water to live. But how important is it really? If you had to guess, what percentage of our bodies do you think is water?

Do Ask

[Hold up **Poster #1** (illustration—outlines of people with the different percentages filled in with water).] Are we 33 percent, 60 percent, or 95 percent water? (Taken from <http://ga.water.usgs.gov/edu/propertyyou.html>.)

Explain Do

Are you ready for this? We are more than 60 percent water! 60 percent! Close your eyes for a moment and let's think about the water in our bodies being slowly sucked out of our skin and bones and our organs, out of all of our cells. What would be left? We're at least 60 percent water, so we'd be less than half of our size! We need water.

Ask

So, where do we get this water that we need?

**Prompts:** Faucets/taps, bottled water, the ocean, lakes.

Explain

Today we're going to concentrate on the water in our homes that comes to us through pipes to our sinks and showers. This water takes a long journey to get to you and some unusual things happen before you use it.

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## Poster #1



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# What percentage of our bodies is water?





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### 2. Water Detective Activity

(15 minutes)

Ask

Let's think about the trip that a drop of water takes. Let's say it starts in a lake 200 hundred miles away from where we are now. How do you think it gets to us?

**Prompts:** Do we drink it right from the lake? What might be in the water if we drank it right from a lake? Dirt? Fish? Parasites? Insects? Is it driven to us in trucks?

Ask

If we were to drink water directly from a lake, what might happen?

**Prompts:** Would we get sick? Would we all have to live close to lakes?

Explain  
Do

The freshwater—from lakes and streams and rivers—needs to be filtered before we can drink it in order to remove dirt, bacteria, small fish, and other things that could harm us. Even when water from these sources looks clear and clean, there are things that we can't see that could harm us. [Show **Poster #2** (photos of water treatment plants).]

Explain  
Do

We're going to take a closer look at what might be in the water in a lake or stream or that might go down our storm drains. [Divide the class into six groups and give two cups of water and a magnifying glass to each group. Cup 1 should be the unfiltered water from the outside and Cup 2 can be bottled or tap water. Assign one person in each group to record the group's observations. Depending on each group's size and dynamics, you may need to give each child a set amount of time to use the magnifying glass.]

Explain  
Ask

What does a magnifying glass do? It allows you to see things in more detail. You will be looking at your water sample to see what you can find with both your eyes and with the magnifying glass.

Explain  
Do

[Hand out **Visual Card #1** (questions for observation).] The group recorders will write down the answers to the questions on the card. You have 10 minutes.

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## 2. Water Detective Activity *(continued – page 2)*

Do

Circulate among the groups asking prompting questions, such as Where do you think that came from? Would you want to drink that? If you saw something with the magnifying glass that you didn't see with your eyes, what do you think you could see with a microscope? After the allotted time, bring the groups together.

Ask

Would the group reporters please read their findings to everyone?

Explain

Respond to the groups' findings. Most groups will see more with the magnifying glass. Use some of the same prompting questions again, such as Where do you think the things in the water came from? Would you want to drink that? If you saw something with the magnifying glass that you didn't see with your eyes, what do you think you could see with a microscope?

Explain

So, now that we know what might be in the lake that our water comes from, let's see the trip our water takes.

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## Poster #2



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# Water Treatment Plants





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### Visual Card #1



### Observe with your eyes

1. What color is the water?
2. Is there anything floating in the water?
3. Is there anything moving in the water?



### Observe with the magnifying glass

1. What color is the water?
2. Is there anything floating in the water?
3. Is there anything moving in the water?



## Lesson 7: Healthy Water Inside

### 3. Water Travels

(10 minutes)

Explain

Our little drop of water starts in the lake and goes through four steps before it's ready for us to drink.

Ask

After it goes through all of these steps, we call the water potable—have you heard this word before? What does it mean?

**Prompts:** We wouldn't call water from a lake **potable**. Potable means that it is safe for humans to drink.

Explain  
Do

[Show **Poster #3** (illustration of the water treatment cycle).] The water comes from the pond into the water treatment plant and goes through four main steps.

Explain

First, the water goes through a step to remove dirt and particles that we can see; next, it is filtered to remove even smaller particles that we can't see; finally, it's disinfected to remove any bacteria or viruses or microbes. In most cities, a small amount of fluoride is added to the water to help strengthen our teeth. Sometimes, a small amount of a chemical called chlorine is added to drinking water to keep it free of bacteria, viruses, and microbes. (Taken from [http://water.epa.gov/learn/kids/drinkingwater/watertreatmentplant\\_index.cfm](http://water.epa.gov/learn/kids/drinkingwater/watertreatmentplant_index.cfm).)

Explain

The water is now ready for us to drink!

Ask

Does all of the water that is used in homes go through the water treatment process?

**Prompts:** What if you're very far away from a water treatment plant?

Explain

Some people get water from private wells. Well water is a great source of water for many families in our country.

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### 3. Water Travels *(continued – page 2)*

**Teacher Note:** If your group does not have exposure to or use well water, you can skip the following:

Ask

If you get water from a well, what are some ways to make sure that the water is safe to drink and that it stays safe?

**Prompts:** Would you know by looking at it?

Explain

Well water should be tested at least every year. The well should be covered securely. Don't use or mix cleaners or chemicals by the well.

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## Poster #3

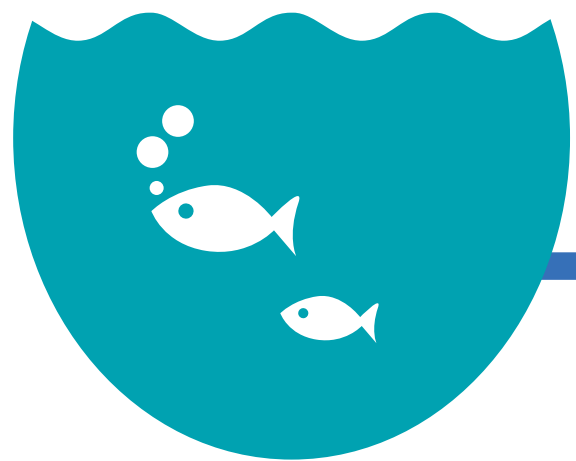


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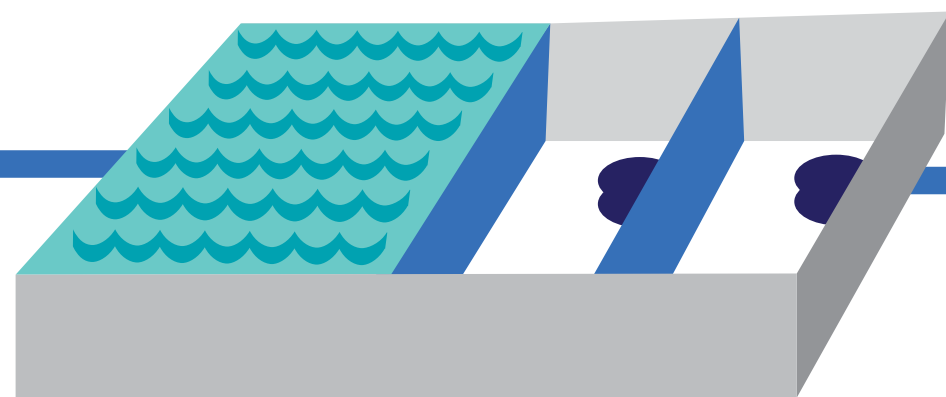
# Water Treatment Cycle

## Lake or Reservoir



## Sedimentation

Heavy particles settle to the bottom; the clear water moves on to disinfection.



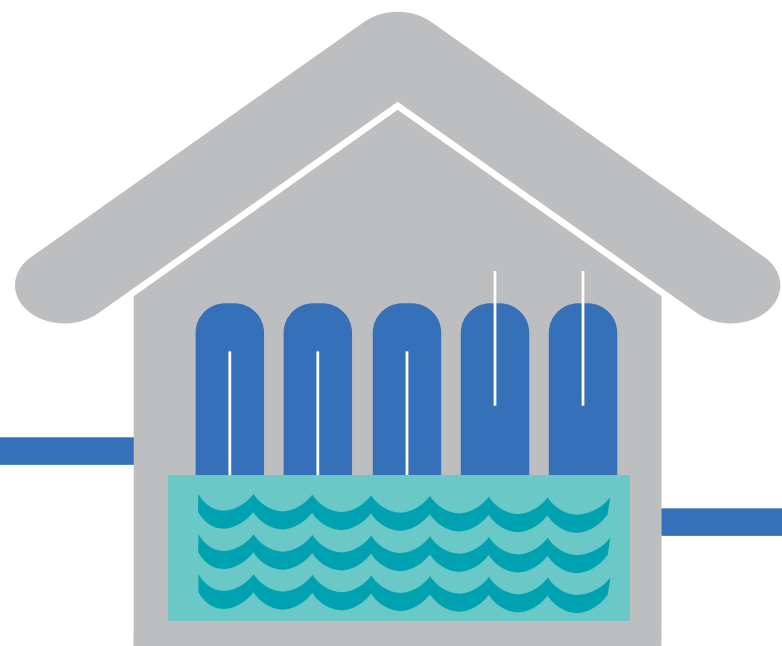
## Disinfection

Chlorine and other disinfectants are added to kill microorganisms



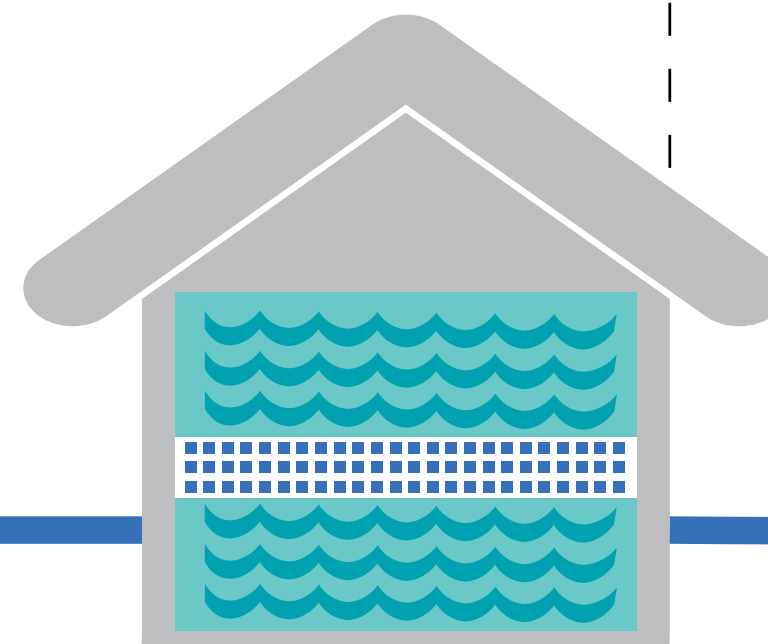
## Coagulation

This process removes dirt and other particles suspended in the water; chemicals are added to attract particles, which then become heavy enough to sink.



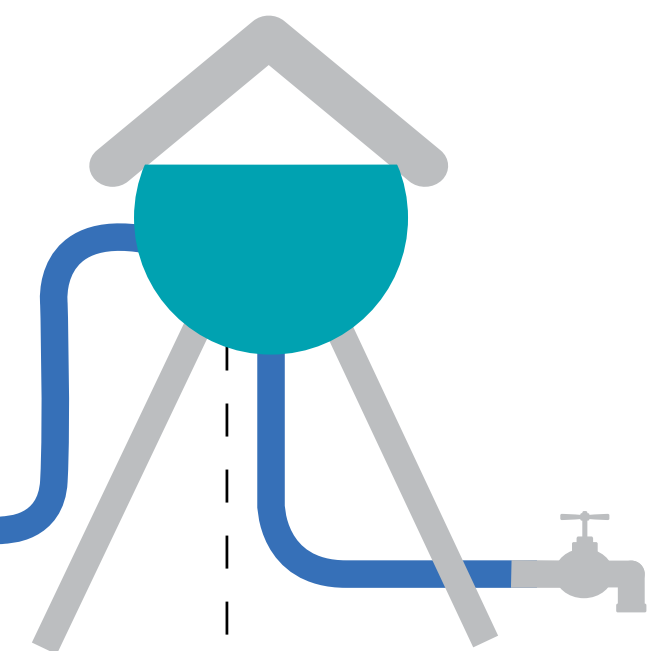
## Filtration

Water passes through filters made of layers of sand, gravel or charcoal that remove even smaller particles.



## Storage

Disinfection occurs in a closed tank or reservoir before water flows to user.





## Lesson 7: Healthy Water Inside

### 4. Conserving Water

(5 minutes)

Do  
Ask

Do you know how much water a family of four uses every day in the United States? [Show **Poster #4** (family of four with three options: 50, 100, or 400 gallons of water).]

**Prompts:** Think about what you use water for every day. Do you shower with it? Cook with it? Wash your clothes? Do you think that this family uses 50 gallons? 100 gallons? Or 400 gallons? Answer: 400 gallons!

Ask

Let's think about where we use that water. What did you use water for today? Showering? Cooking? Washing clothes? Washing dishes? Drinking? Watering plants?

Ask

How many gallons of water do you think a 10-minute shower uses?

**Answer:** 16–20 gallons.

Explain  
Ask

So cutting your showering time down by a minute can save a lot of water. Here's a challenge—time how long you normally take a shower. Now, can you cut your shower down by a minute? By two? By three? Think of all the water you will save! Turn off the water while you soap up and turn it on to wash off.

Explain

Running your dishwasher takes about 10 gallons of water, so make sure it's full when you run it.

Ask

We learned that the water we use to cook and clean and drink goes through a long process to ensure that it's safe for us. What are some ways that we can make sure that we're not wasting this precious resource?

**Prompts:** How can we conserve/save water in our daily routines?

(continued on other side)

#### 4. Conserving Water *(continued – page 2)*

Explain

Don't let the water run when you're brushing your teeth. Take showers instead of baths. If your sink leaks, let an adult know—a slow drip that runs all the time can add up to a lot of wasted water!

Ask

Guess how much water a leaky faucet can waste? A leaky faucet that drips at a rate of one drip per second can waste more than 3,000 gallons per year.

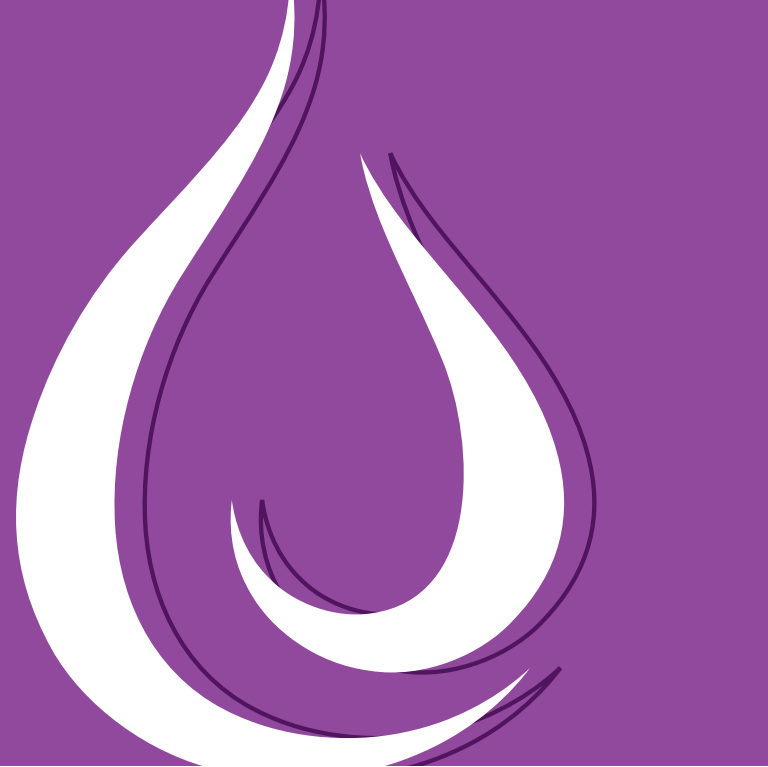


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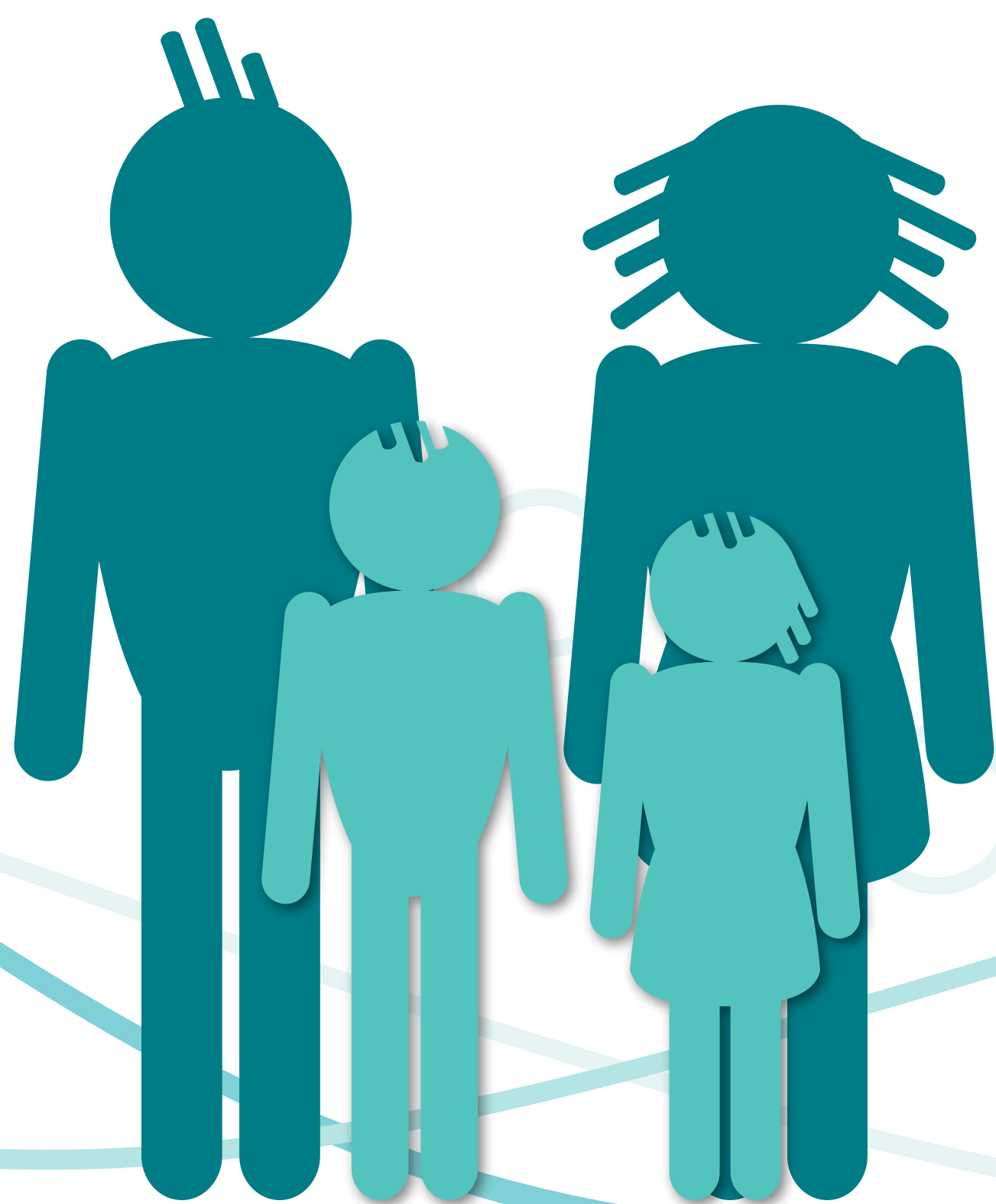
## Poster #4



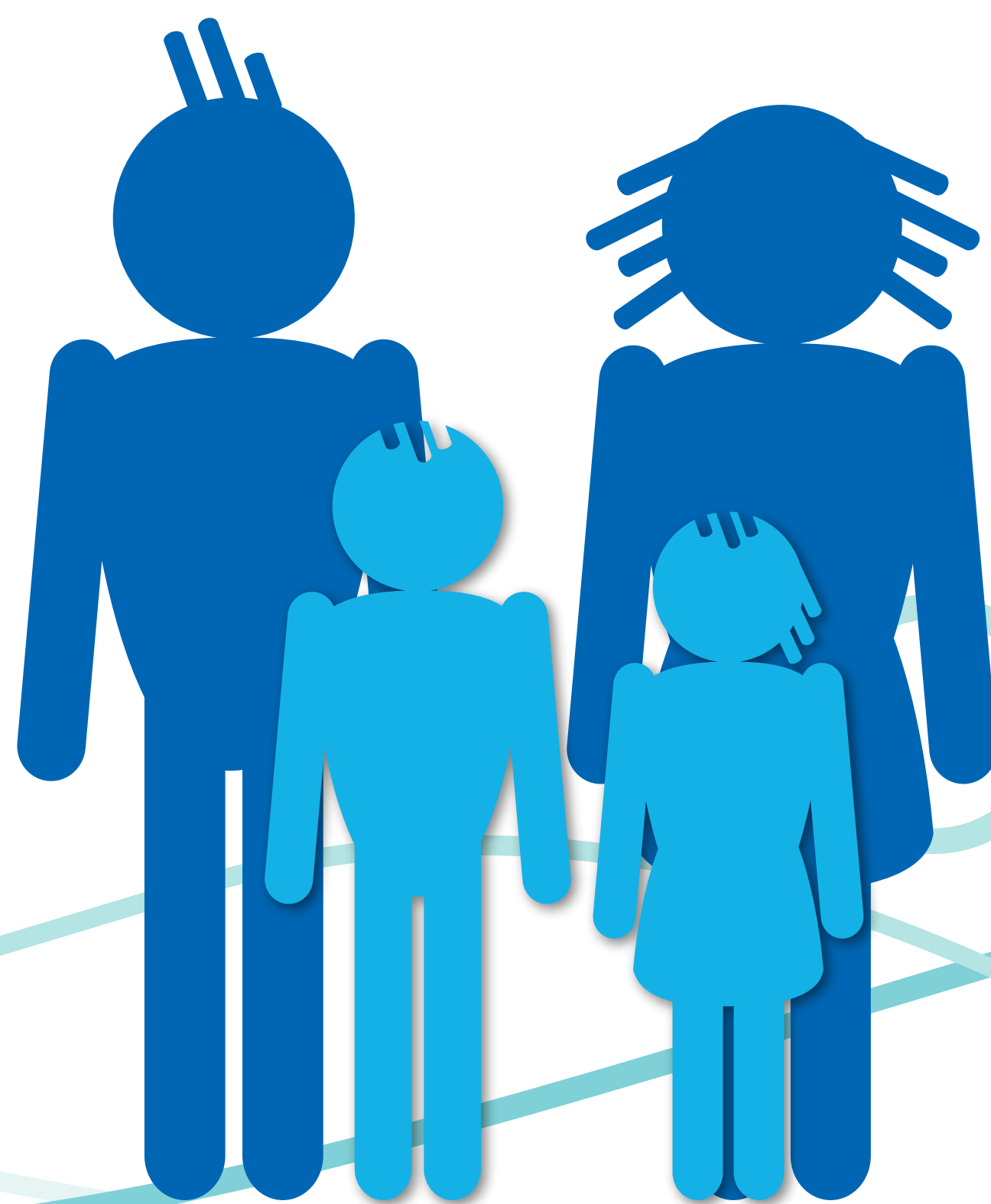
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How much water does the average family of four use every day?



50 Gallons



100 Gallons



400 Gallons



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### 5. Avoiding Mold and Mildew

*(5 minutes)*

Explain  
Ask

The other thing that leaks and excessive water can do in our homes is cause mold and mildew to grow. What is mold? What is mildew?

Explain

Mold and mildew are both types of fungus that grow in areas that are damp or have a lot of moisture. Both grow on surfaces and they usually look like dark brown, green, or black spots. Mold and mildew love showers and bathrooms because showers stay wet after you get out of them.

Ask

Where else do you think mold or mildew might grow?

**Prompts:** Where else in our homes is often wet or damp? What areas of our house get warm?

Explain

Kitchens, bathrooms, laundry areas, basements, and attics. The best way to get rid of mold is to remove the source of moisture.

Ask

Why do we want to keep our homes mold- and mildew-free? What can mold do to us?

Explain

Mold and mildew are irritants—they can cause allergies and asthma and can make it difficult for some people to breathe. And remember, since children’s lungs are still developing, kids are especially at risk of being affected by mold and mildew.

Ask

So, how do we avoid mold and mildew?

Explain

Keep areas that are often wet, dry—wipe down the shower after using it; be sure to move clothes from the washer to the dryer quickly; get a dehumidifier for basements and attics, increase your ventilation source (e.g., open a window in high-moisture areas).



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### 6. Close and Take-Home Talk

*(5 minutes)*

Explain  
Do

Close your eyes and take a nice deep breath. We've covered a lot today. We examined some water more closely and observed things that we can't see with our eyes alone. We talked about how a drop of water goes from a stream all the way to our faucets. We talked about mold and mildew in our homes—who can tell us what mold is? *[Call on a student.]* How do we stop mold from growing in our homes?

Explain  
Ask

We also talked about how we need to take care to conserve water in our homes—it takes so much to get water clean and safe and to us, we need to be sure to use only what we need. What are some ways that we can conserve water? You can open your eyes now.

Take-Home  
Talk

The coolest part about learning something new is sharing the knowledge. Tonight, when you get home, I want you to talk with your family about the things that we learned today. Look around your house to make sure that there aren't any leaks or drips and work with an adult to fix any that you find. Think about taking super-fast showers instead of baths to conserve water. Go on a mold hunt. Challenge your family to think of ways to use less water!

Explain  
Do

*[Pass out **Take-Home Talk**.]* This Take-Home Talk sheet has some things that you can share with your family and some activities that you can do at home. See what you can accomplish on the sheet and we'll talk about it the next time we meet.

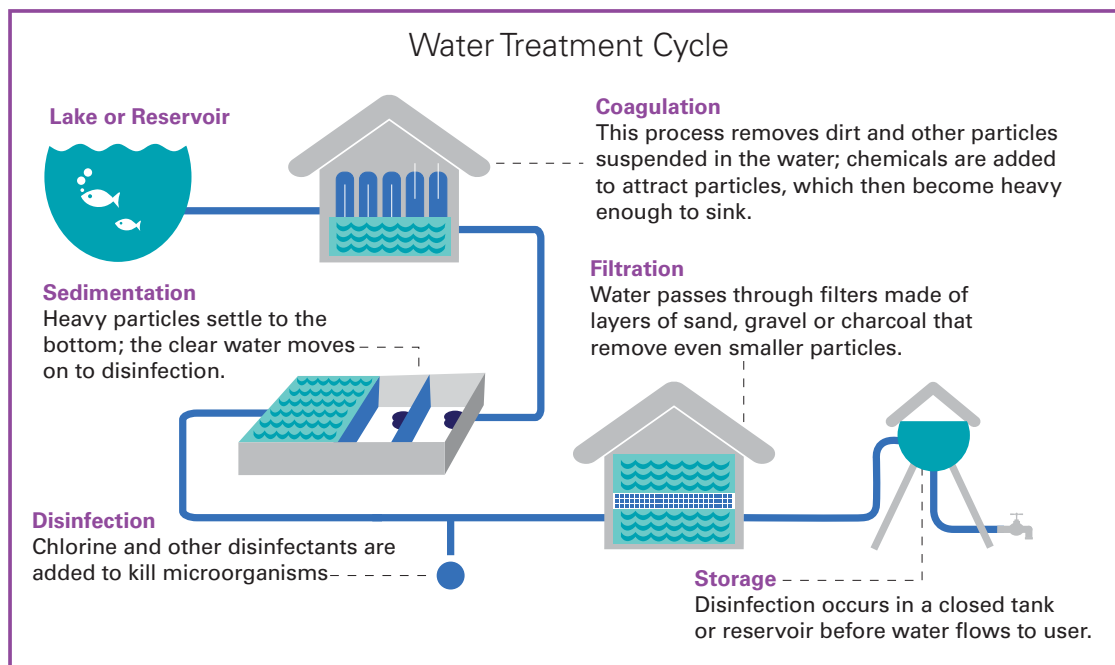


## Take-Home Talk

### Lesson 7: Healthy Water Inside

#### To Share:

- Humans are more than 60 percent water! 60 percent! We need water to live.
- Freshwater—from lakes and streams and rivers—needs to be filtered before we can drink it to remove dirt, bacteria, small fish, and other things that could harm us. Even when water from these sources looks clear and clean, there are things that we can't see that could harm us.
- In the United States, a family of four uses 400 gallons of water a day!
- Mold and mildew can form easily in areas of your home where water is used often—in bathrooms, kitchens, and laundry rooms. Be sure to wipe away moisture and clean mildew.



*(continued on other side)*



## To Do:

- **Water Everywhere!** We use water so often throughout the day that we rarely think about it. Ask your family to track all of the times throughout the day that they use water—have each member of your family keep a running log. By learning when we use water, we can see where we can easily save water.

**Just a few daily activities that use water:** Taking a shower or bath, using the toilet, cooking, washing your hands, drinking anything.

- Who in your family had the most activities that used water? Who had the least?
- What are some simple ways in which you can all cut back on your water usage?

## To Take Back:

- What was the coolest thing that you learned from talking about this topic with your family and friends?
- 