

Where Does My Tap Water Come From?

Primary Micro-Lesson 1



Table of Contents

Introduction 3

Warm-Up 3

Instruction..... 4

Engage..... 4

Introduction

Water is the most important natural resource on Earth, yet a great deal of people in Hamilton can't answer this question: where does your tap water come from?

Through this micro-lesson, students will explore sources of water in the environment and discover exactly where most people in Hamilton get their tap water.

Table 1: Elements of Micro-Lesson 1

Activity / Demo	Key Question	Objective
Warm Up Exercise:- Water Sources	Where is water found?	Develop an awareness that drinking water comes from a source in the environment
Video 1: Where Does My Tap Water Come From?	Where in our environment does Hamilton's tap water come from?	Understand that tap water comes from Lake Ontario and it's journey from source to tap
Activity 1: Trip of a Drip	Where in our environment does Hamilton's tap water come from?	Understand that tap water comes from Lake Ontario and its journey from source to tap
Colouring Page 6: Lake Ontario	Where is Hamilton located on Lake Ontario?	Understand the scale of Lake Ontario
Word Search 3: Water Places	Where is water found?	Develop an awareness that water can be found in many places in the environment

Warm-Up

We use water every single day. We just turn on the tap anytime we need clean water to use. Ask your students if they have ever thought about where that water actually comes from. It must come from somewhere! Indicate that tap water comes from somewhere in our environment.

Have students list (verbal or written) all of the places that we can find water outside in our environment. Ask them to identify which source on their list they think their tap water comes from. Guide or prompt students as necessary (E.g. Do you ever see water when you look out the car window? Where do fish live? etc.)

Each student can create their own list to be compiled into one comprehensive list. Fill in and share any gaps left off of the list. E.g. students may not think of clouds, glaciers, underground sources such as aquifers/wells, etc.

Instruction

Have your students watch the video “Where Does My Tap Water Come From?” to discover the source of their tap water! The video can be found here:

<https://youtu.be/vYDZ-1yX9co>

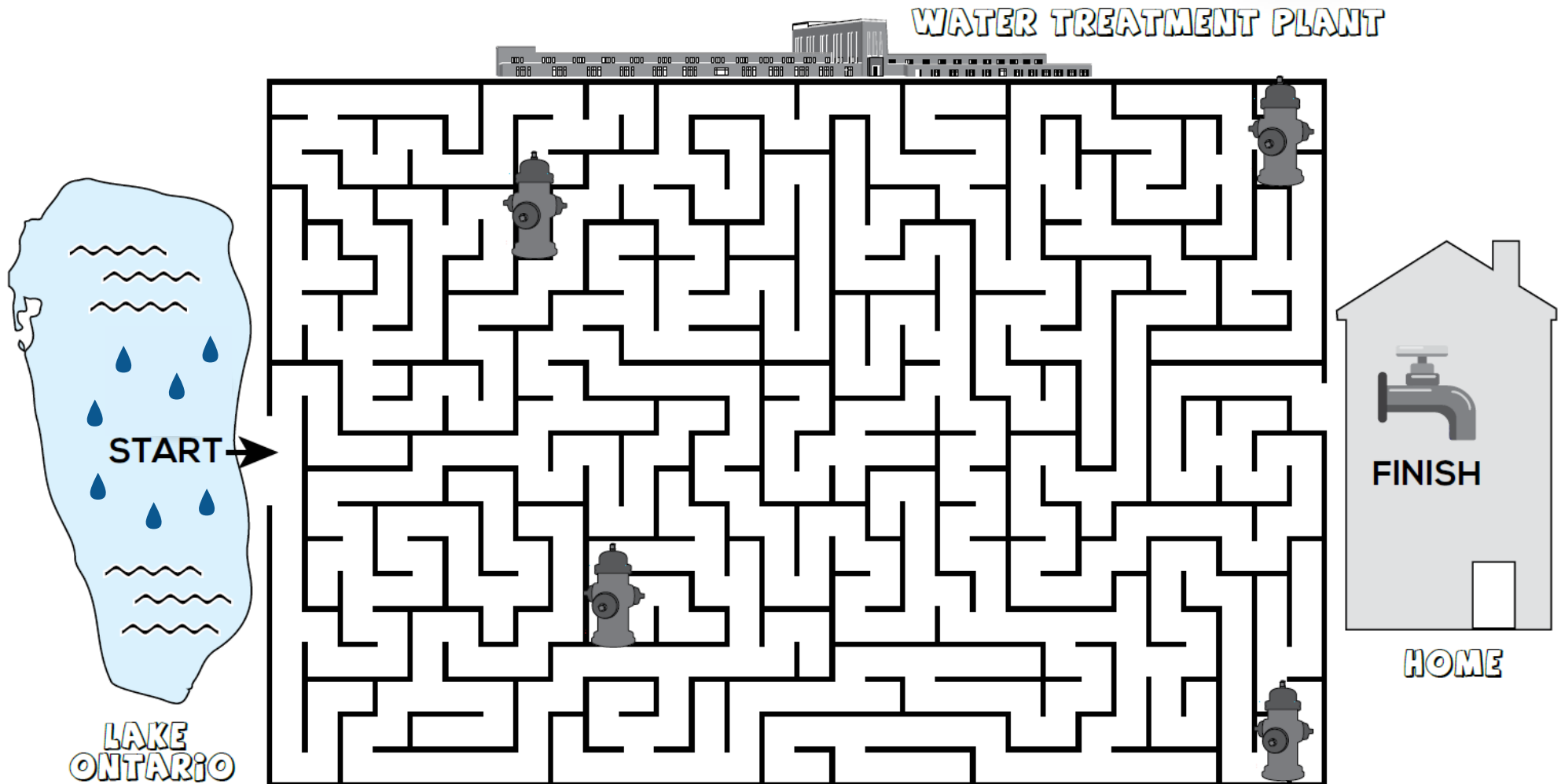
Engage

To identify student understanding, following the video ask your students if they were surprised about where their tap water comes from. What is one thing that happens to the water before it gets to their tap? Have students complete one or several of the following resource activities below to reinforce the key concepts from the lesson:

- Activity: Trip of a Drip
- Colouring Page: Where Does Your Tap Water Come From
- Word Search: Water Places

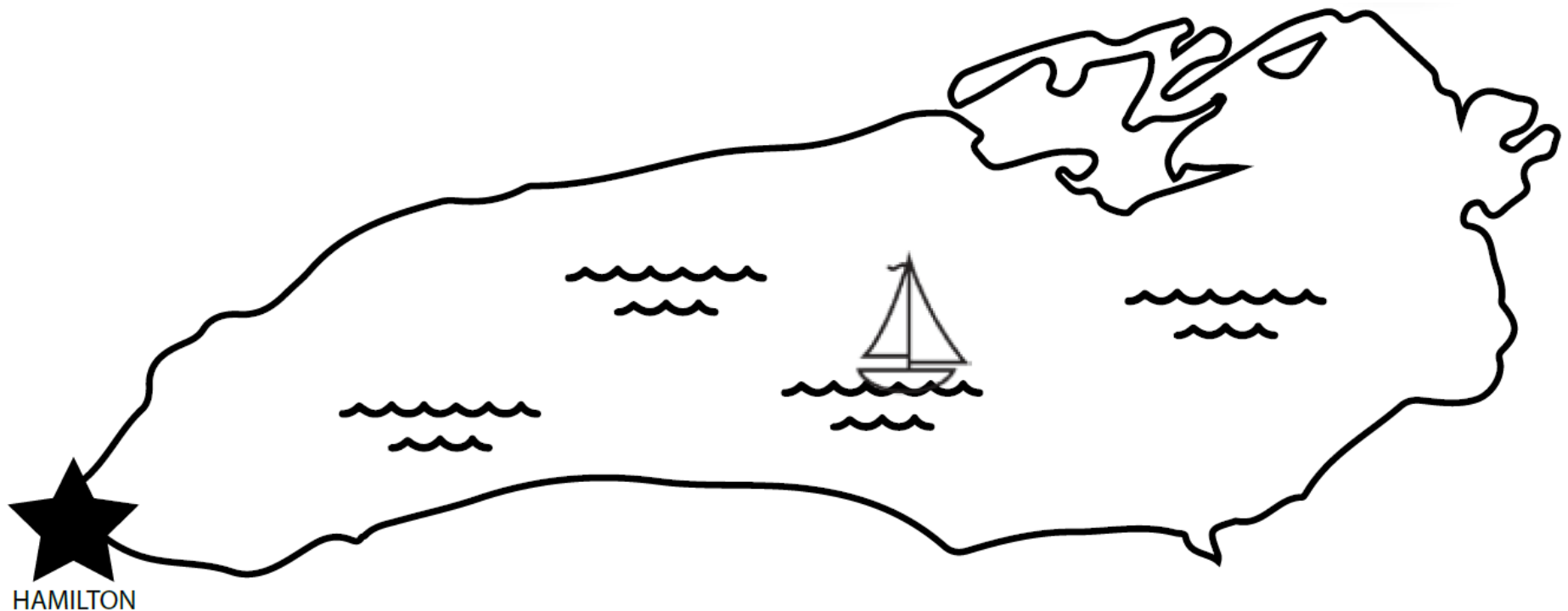
Trip of a Drip

Can you help the water drops travel from Lake Ontario to your tap? The water drop has to go by the Water Treatment Plant to get cleaned first before it can get to your tap!



Where Does Your Tap Water Come from?

Have you ever thought about where the water from your tap comes from? It goes on a long journey from Lake Ontario through pipes, pumps and even a water treatment plant to be cleaned before it gets to your tap!



LAKE ONTARIO

Water Places Word Search

You can find water everywhere you look. Can you find some of these places in the puzzle?

[illegible]

Water Conservation

Primary Micro-Lesson 2



Table of Contents

Introduction 3

Warm-Up 3

Demonstration 4

Engage 6

Introduction

Through this micro-lesson, students will investigate how much fresh water we have on available to us on Earth and track their own water use in their homes. This Micro-Lesson contains:

Table 1: Elements of Micro-Lesson 2

Activity / Demo	Key Question	Objective
Water Uses Word Search	How do we rely on water?	Develop an awareness that we rely on water everyday
Demonstration: Water on Earth	How much water is on Earth?	Understand that water is a precious, limited resource
Activity: I Love Water!	Why is water important to us?	Understand that life would be different without running water
Colouring Page: Water Saver	How can I save water?	Explore ways that water can be conserved at home
Activity: Water Tracker	How much water do I use?	Quantify the amount of water used in a normal day

Warm-Up

We rely on water for so many things everyday and many of us don't think twice about how much we use or about how much is available. Have your students think about their daily routine and create a list of all of the things that they can think of that they use water for. Prompt or guide students as necessary (E.g. What do you do after you go to the bathroom? Do you have a bath/shower? Do you use water to cook?). Students may also complete **Wordsearch: Water Use** as a warm up to the demonstration. Each student can create their own list to be compiled into one comprehensive list. Fill in and share any gaps left off of the list. E.g. students may not think of clouds, glaciers, underground sources such as aquifers/wells, etc.

Demonstration

Introduce this activity by stating that the surface of the Earth is mostly covered in water, roughly 70%! The rest, or 30%, is land. Optional: show a picture of Earth representing the amount of land and water. Where on Earth can we find Earth's water? Oceans, lakes, rivers, etc. We have a lot of water in our world, but how much of this water is available for us to get to drink and use? In this activity, we will find out about how much (or how little) we can drink and use.

Some or all of the following steps can be prepared by the instructor in advance or the student(s) can assist with carrying them out. Prepare the first steps of the demonstration:

1. Measure 1 litre of water and pour into a clear container
 - a. Optional: Add a few drops of blue food colouring
 - b. Optional: Place a print out of the earth in front of the container

Use your imagination and picture that we have taken all of the water on Earth and put it into this container. This container now represents all, or 100%, of the water on Earth. This water is made up of two different kinds of water, freshwater and saltwater. Can we drink saltwater or freshwater? Humans can drink freshwater but not saltwater!

For the next step, explain that you will be splitting the water in the container between the amount of freshwater and saltwater found on Earth. Ask the student(s) how much of the water on earth is saltwater. How much is freshwater? After a guess is provided, prepare the second step of the demonstration:

2. Measure and remove 2 tablespoons of water from the large container and place in a clear empty cup (cup #1)

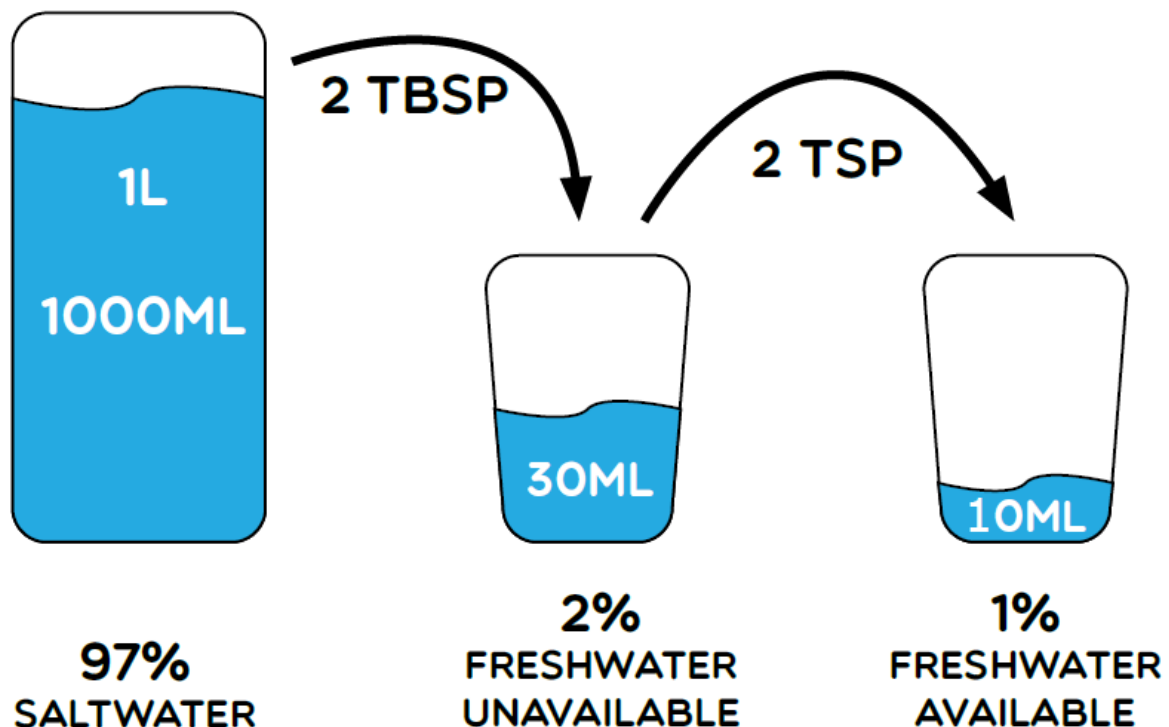
Explain that Cup #1 represents freshwater (3% of the water on Earth) and the large container now represents saltwater (97% of the water on Earth). Stress that humans can't drink saltwater.

Lastly, explain that we can't access all of the freshwater on earth. Some of it is frozen, buried deep underground, floating around as water vapor, etc. State that we will now split the freshwater into the amount that we can and can't access. Prepare the last step of the demonstration:

3. Remove 2 teaspoons (10ml) of water from Cup #1 and place in a second clear cup (Cup #2)

Explain that Cup #2 represents the amount of fresh water (1%) that is available for us to use and drink which is spread all over the Earth. Cup #1 represents all of the fresh water that we can't access (2%).

Wrap up the demonstration by placing the large container and two small cups side by side. Explain that although we have so much water on Earth, we have a very small amount that we can use. To aid with understanding, consider labelling the container and cups throughout the demonstration.



Engage

The average person in Hamilton uses more than 200L of water every single day. Ask your students if they know how much water they use at home. Since we have such a limited amount of freshwater on Earth we need to be careful how much we use. Provide your students with **Colouring Page: Be a Water Saver** for ways to cut down on their water use. Optionally, students can also complete **Activity: Why I Love Water** to share what they love most about water. To finish the lesson, students can complete **Activity: Water Tracker** to determine how much water their household uses in a day. To expand on this activity, students can complete the worksheet for multiple days to see if they can reduce their water use!:

Water Use Word Search

We use water for so many different things! Can you find all the ways we use water in the puzzle below?

U	L	H	P	L	K	B	T	C	P	X	L	C	T	H	B	G	G	J	Z
B	G	N	H	C	E	Q	K	S	C	N	N	Z	T	B	N	W	S	D	L
M	H	A	S	P	B	I	Y	B	Q	Z	T	E	C	J	D	T	P	W	G
T	Q	Z	P	H	G	G	Q	R	M	N	E	G	X	Y	A	V	N	J	R
A	K	F	I	H	V	A	W	O	G	T	Y	Q	H	O	R	W	X	N	K
R	C	C	P	A	D	C	Q	Q	H	Z	S	I	B	O	X	A	C	K	M
R	L	C	A	Q	Q	U	R	S	W	V	H	O	E	X	S	T	M	E	O
L	E	F	D	R	V	E	U	U	U	C	B	B	B	K	F	E	N	N	E
Z	A	B	T	P	W	R	V	J	M	F	U	P	P	R	D	R	I	N	K
P	N	J	K	O	B	A	P	G	G	V	M	Q	L	Q	V	I	I	F	L
Q	I	P	H	O	L	Z	S	N	F	O	U	N	T	A	I	N	L	L	M
I	N	S	J	D	C	U	I	H	F	B	Y	Q	B	Z	Y	G	O	F	H
K	G	Q	P	X	V	H	S	J	O	L	F	T	T	A	P	I	H	G	W
N	N	D	X	K	S	W	A	S	B	T	H	P	I	L	W	X	N	M	A
C	F	H	B	I	R	O	S	W	I	M	M	I	N	G	S	I	J	G	O
U	U	C	F	S	Q	Q	B	A	T	H	B	M	D	X	V	L	R	Y	E
R	H	L	N	S	R	A	D	N	U	V	Y	K	N	I	J	K	O	R	K
J	B	Q	K	Z	H	E	Y	J	L	T	T	J	D	P	P	J	R	J	V
L	E	Y	T	G	Q	K	M	F	U	X	X	R	P	C	Y	S	K	H	S
T	O	I	L	E	T	W	O	O	H	L	F	I	V	D	K	C	N	L	Y

BRUSH TEETH
DRINK
FISHING
TOILET
HOSE
SHOWER
BOATS
WATERING
FOUNTAIN
CAR WASH
CLEANING
SWIMMING
PLAYING
BATH
DIVING



Why I Love Water!

Draw a picture in the water drop of why you love water!



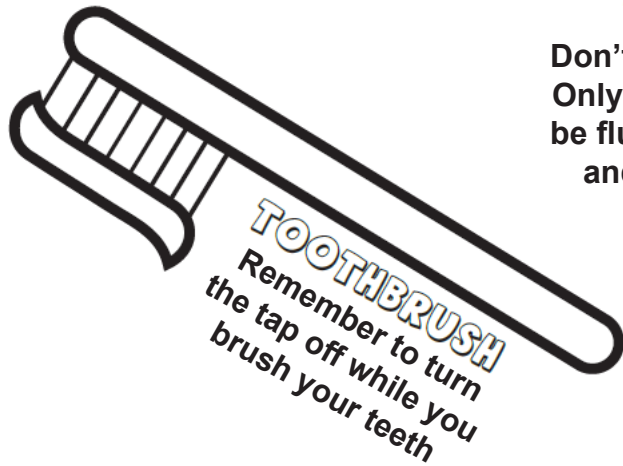
I love water because:

Did you know?

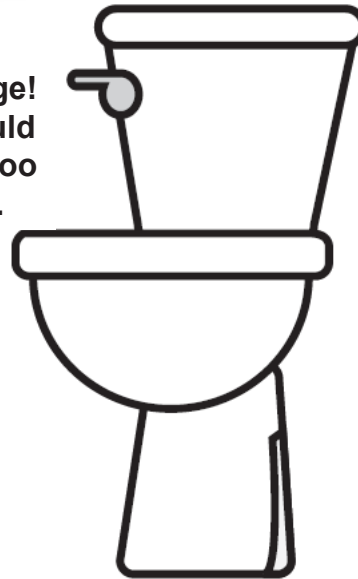
It costs less than \$2 to fill a glass 2,000 times with Hamilton tap water.

Be a Water Saver

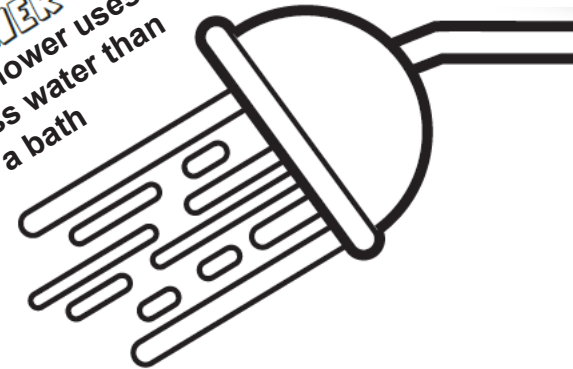
Did you know that out of all of the water on our planet, only 1% is available for us to use? You can help protect our water sources by following these water-saving tips!



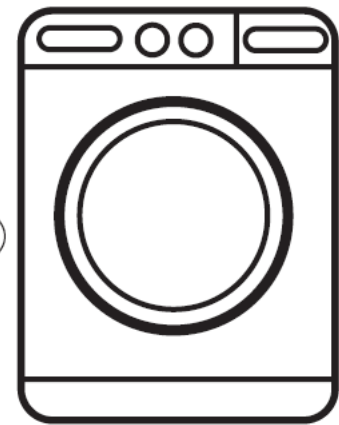
TOILET
Don't flush garbage!
Only the 3Ps should
be flushed: pee, poo
and toilet paper.



SHOWER
A short shower uses
much less water than
a bath

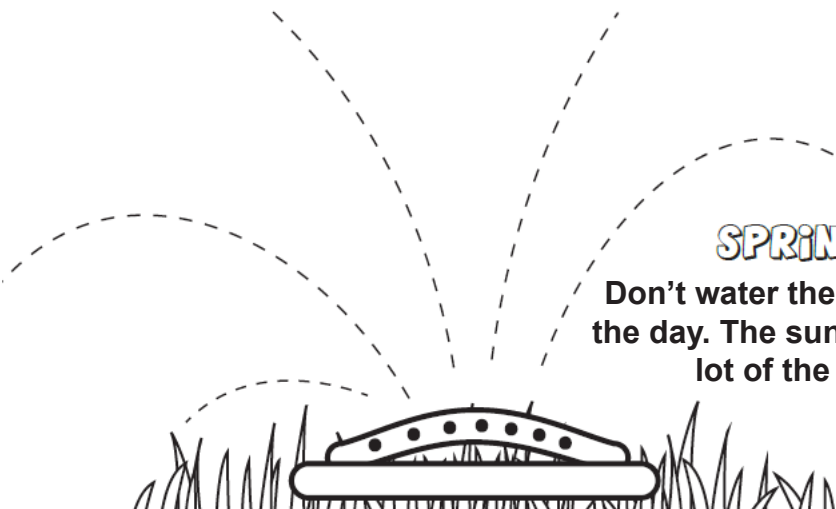


WASHING MACHINE
Only wash your
clothes when there's a
full load



SPRINKLER

Don't water the lawn during
the day. The sun will dry up a
lot of the water!



Water Tracker

Place a checkmark in a water drop each time your family uses water!
Add up all of your water drops at the end of the day to see how much water you use.



Drink



Number of
Checkmarks

X 0.5
Litres =

Litres



Wash Clothes



Remember to only wash full loads!

Number of
Checkmarks

X 53
Litres =

Litres



Flush Toilet



Number of
Checkmarks

X 6
Litres =

Litres



Wash Hands



Number of
Checkmarks

X 2
Litres =

Litres



Brush Teeth



Remember to turn off the tap while brushing!

Number of
Checkmarks

X 0.5
Litres =

Litres



Shower



10 minutes or less shower is best. 2 baths = 1 shower!

Number of
Checkmarks

X 75
Litres =

Litres



Wash Dishes



A dishwasher can use less water than the sink!

Number of
Checkmarks

X 15
Litres =

Litres

Add up all the numbers in the blue rectangles
to see how much water your family used today!

=

Litres



Hamilton

Pollution Prevention

Primary Micro-Lesson 3



Table of Contents

Introduction 3

Warm-Up 3

Demonstration 4

Engage 6

Introduction

Through this micro-lesson, students will investigate the proper behaviours to prevent pollution and learn that negative behaviours can have a negative impact on our environment. This micro-lesson contains:

Table 1: Elements of Micro-Lesson 3

Activity / Demo	Key Question	Objective
Colouring Page: Flushables vs Unflushables	What can be flushed?	Develop an awareness that wastewater ultimately ends up in the environment
Own Your Throne Video	What can be flushed? Why can't certain items be flushed?	Understand plants and animals require clean water to live
Demonstration: Own Your Throne!	Why can't certain items be flushed?	Understand how certain items impact pipes and sewers
Activity: Own Your Throne	What can be flushed?	Identify which items belong in the toilet and which belong in the garbage

Warm-Up

All of us need water to live. More specifically we need clean water to live. Ask your students to think about where their water goes after they flush the toilet, have a bath, brush our teeth etc. The answer will likely be “down the drain” but where does the drain lead to? Is that water in the drain really dirty?

The water that goes down our drains and toilets is called “wastewater” and is extremely toxic to humans, plants and wildlife. Wastewater goes through sewers to the wastewater treatment plant to be cleaned before going back into the environment (Hamilton

Harbour). It's important it gets cleaned so that there is no harm to the environment including our water, plants and wildlife.

To get your students to start thinking about toilets and to “normalize” the topic, watch the Own Your Throne animated short here (2 minutes):

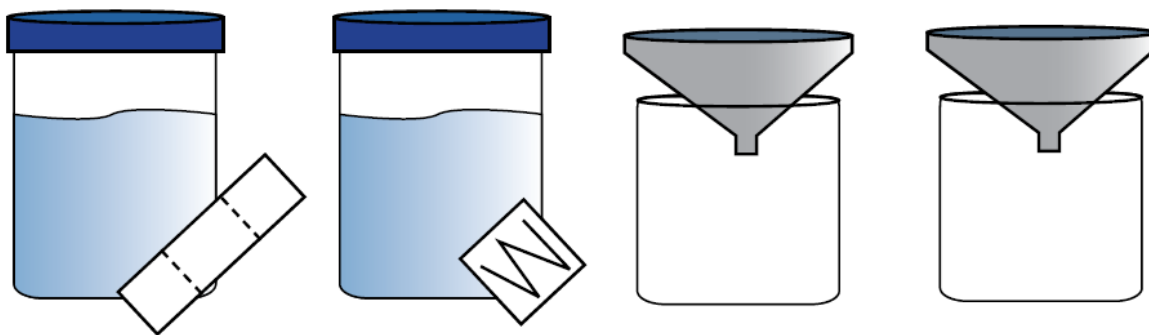
<https://youtu.be/THXeHB4z2k?si=HJhDK01bfcnkET->

Demonstration

One of the easiest things that we can do at home to prevent pollution and protect our sewers is to only flush the 3Ps (pee, poo and toilet paper) down the toilet and put garbage in the garbage bin. When garbage like baby wipes, cotton swabs, floss or any other garbage gets flushed down the toilet, these items can create blockages in the pipes in your home or in the sewer systems. These blockages can lead to dirty wastewater overflowing into your homes or into the environment resulting in costly repairs! Explain to your students that they are going to do an activity to see why only the 3Ps should be flushed down the toilet.

Materials needed:

- Two clear containers with lids
- Two clean open top containers
- A few squares of toilet paper
- One wet wipe (makeup remover, cleaning, baby, etc)
- One funnel



Set up the demonstration by filling 2 clear containers with lids halfway with water and placing funnels in the other two containers. Please keep in mind that if using glass containers extra precautions will need to be taken if the students will be handling them. Place the toilet paper beside one container with lid and the wipe beside the other. Explain that the containers represent toilets that they are going to pretend to flush, the funnels are the pipes in your home and the empty containers are the sewer! Ask the students to touch and feel the toilet paper and then the wipe (please read safety warnings depending on the type of wipe you are using). Ask the students to describe how each item feels and looks before placing them in the water. Are they soft/tough, weak/strong, etc. Then, ask the students what they think will happen to them once they are put in water. Will they stay the same, fall apart, etc.

Explain to the students that they will place the toilet paper in one container with water (the “toilet”) and the wipe in the other. Once the items are in the containers with the lids on tightly, each of them can be shaken up/down and left/right to mimic a toilet flushing for 15-20 seconds. Observe what each item looks like after “flushing the toilet”.

Explain that after we flush a toilet the dirty water goes through pipes in our home (the funnel) and into the sewer system (the empty container) to be taken away. Instruct the students to open the first container with toilet paper and carefully dump it into the funnel. Ask the students to describe what they see happening. Is everything flowing freely? Did anything get stuck?

If performed successfully, the toilet paper should break down enough after being shaken to flow freely through the funnel and into the empty container. Explain to the students

that the same thing happens in your toilet. Since the toilet paper breaks down easily, it can flow freely through the sewer system.

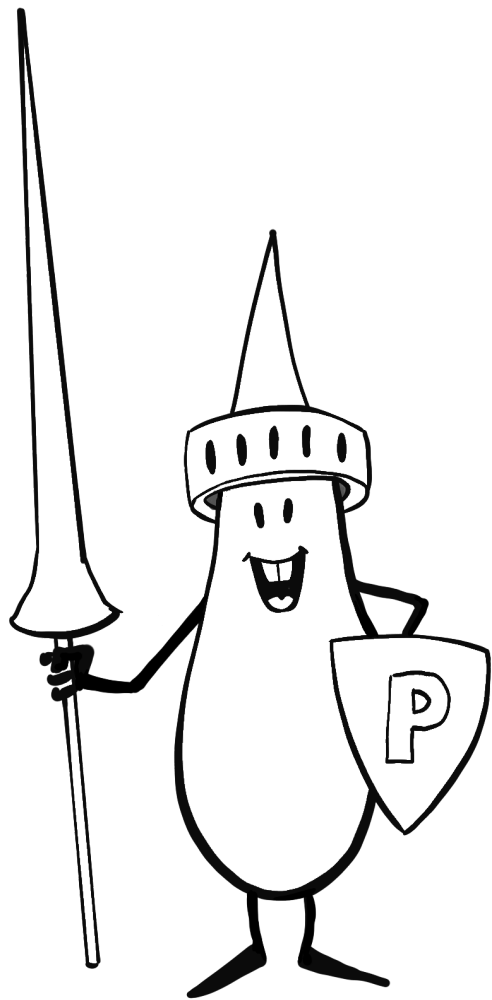
Ask the students to repeat this process for the container with the wipe. Did anything happen differently. Why or why not?

If performed successfully, the wipe should get caught in the funnel and not allow the water to move freely into the container. NOTE: You may need to add more water into the funnel if the wipe enters the funnel last. Explain to the students that the same thing happens in your toilet. Wipes and other garbage don't break down easily and can clog pipes in your home and the sewer system. Without anywhere to go, the dirty water can back up into your home or into the environment!

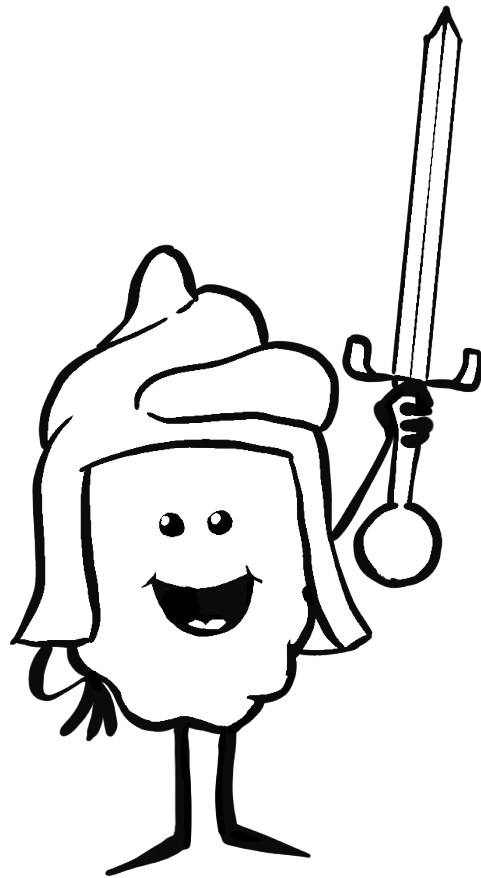
Stress that the dirty water that goes down our toilet and drains is very toxic and can harm humans, wildlife, plants and the environment. The students can do their part by only flushing the 3Ps - Pee, poo and toilet paper!

Engage

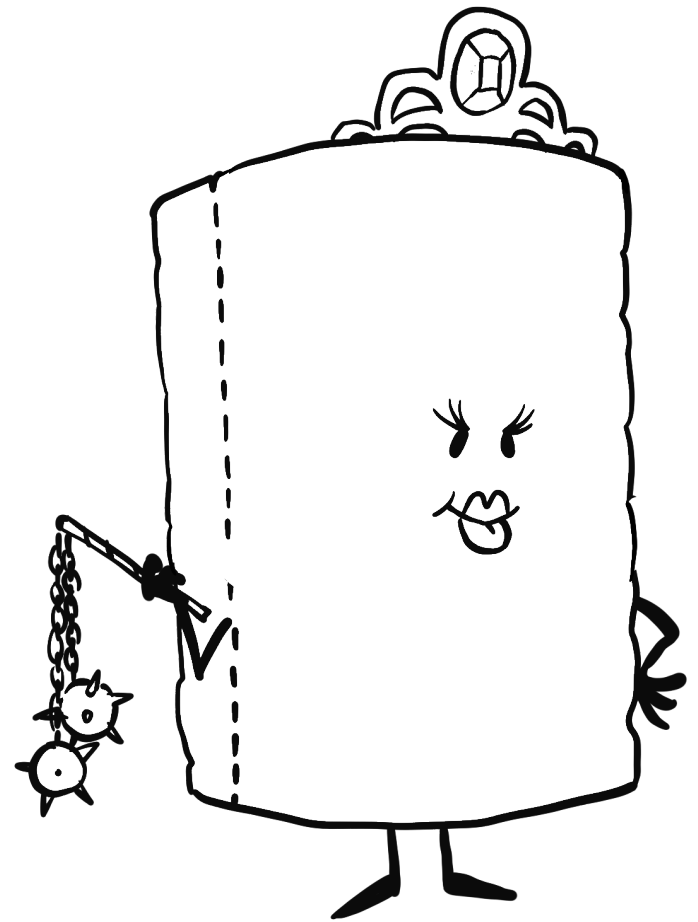
To reinforce this message, students can complete **Activity: Own Your Throne!** below.



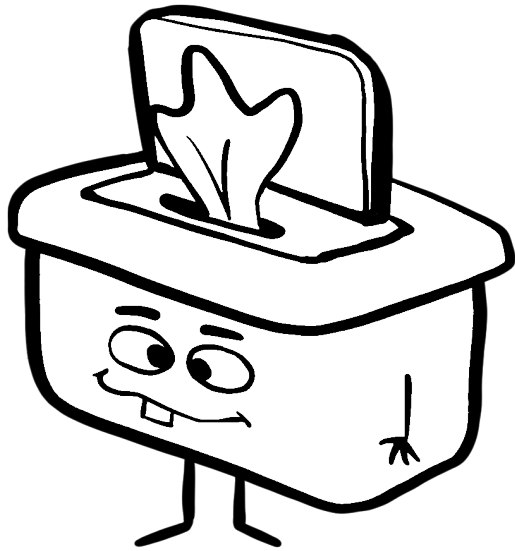
Sir
Peeter
(FLUSH!)



Richard
the
Turd
(FLUSH!)



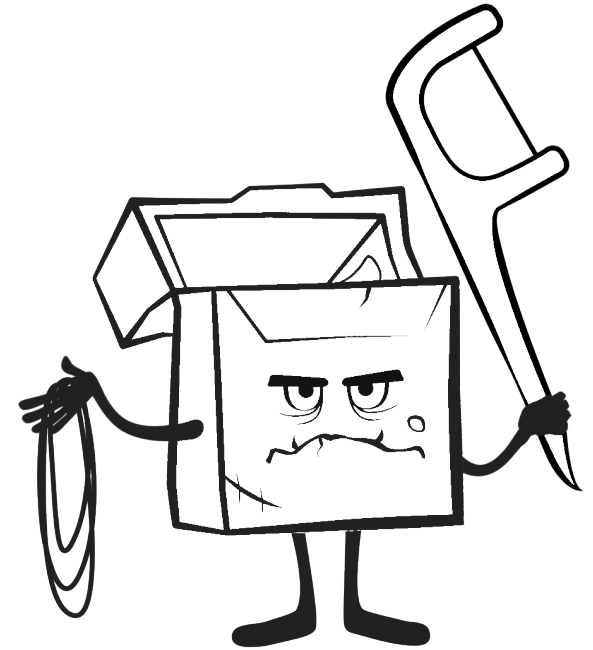
Dutchess
of Swirl
(FLUSH!)



Baby
Wipes
(DON'T FLUSH!)



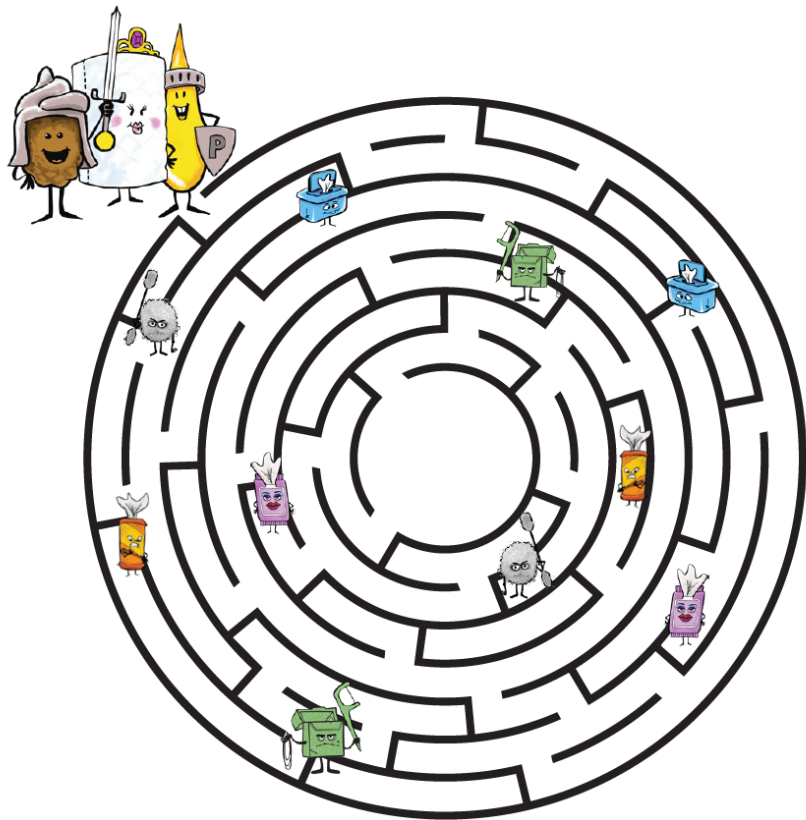
Cleaning
Wipes
(DON'T FLUSH!)



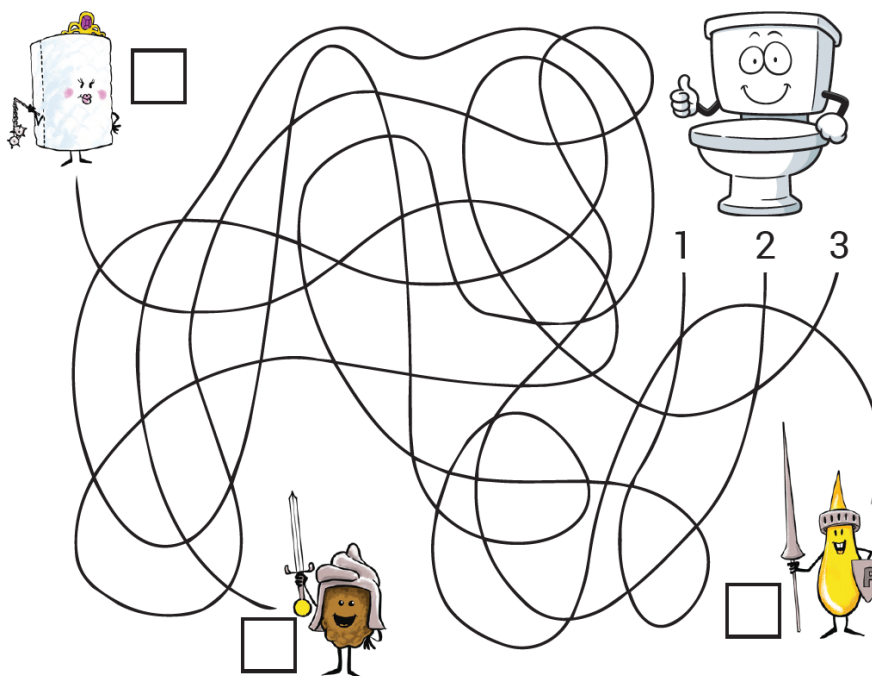
Dental
Floss
(DON'T FLUSH!)

Own Your Throne!

Only flush the 3Ps down the toilet: pee, poo and toilet paper! Garbage like baby wipes, floss and cotton swabs can clog sewer pipes.



Help the 3Ps get flushed.
Watch out for clogs.



Help the 3Ps find their way to the toilet. Write the correct number in the box beside each character.