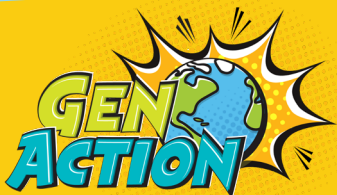


# SCIENCE SPOTLIGHT



## TESTING THE WATERS!



This project was undertaken with the financial support of the Government of Canada.

Canada







# TESTING THE WATERS!

## Origin Story:

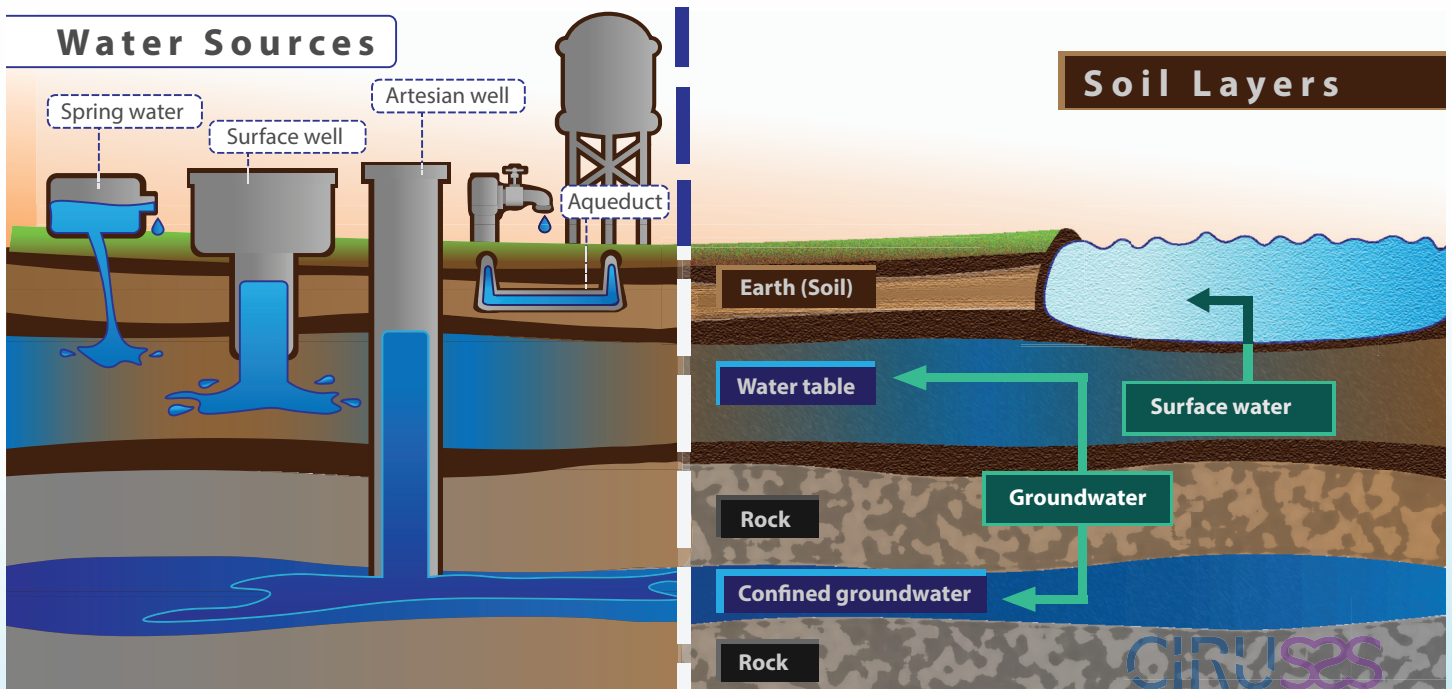
### WHERE DOES YOUR DRINKING WATER COMES FROM?

Many Quebec families get their drinking water from municipal water systems, or aqueducts. An aqueduct is a watercourse that conducts water to a specific area, similar to a road where cars can travel. A municipal aqueduct is like a busy thoroughfare, but for water. The water can come from a well, a lake, a river, or a stream. The water is processed and treated with chemicals, like chlorine, to purify it for consumption. Regular water testing ensures quality.

Families living outside the city or in the countryside collect their water from a well on their property.

Unlike water from a public water supply, water from private wells is not always treated. Even clear, tasteless, odourless well water can carry harmful bacteria and other microbes, or it may contain certain harmful metals and minerals. The only way to check well water is to have it tested by a laboratory. Since water quality can change over time, well water should be tested every year. Well owners are responsible for this, but they are not required to do so.

Unfortunately, most private well owners do not get their water tested every year. There are several reasons for this. Many of them do not know that well water may contain harmful substances that could affect their health and that of their family members. For others, testing is just too expensive or complicated.



## Testing the Waters: LET'S GET MOTIVATED!

Encouraging private well owners to have their water assessed means working to address and overcome these barriers. This is the purpose behind *Mon eau, mon puits, ma santé*, an initiative of the Chaudière-Appalaches public health department, researchers from Université du Québec à Rimouski (UQAR), and three watershed organizations (OBV), in conjunction with other partners. The initiative focuses on individual autonomy, or the power to act. Instead of forcing people to test their water or doing it for them, the program provides well owners with information, while helping streamline the process and save money. It offers resources and support to help them understand test results and how to deal with contaminated water.

### 1 Buying and sending your samples in groups!

Private wells can be located far away from laboratories. With *Mon eau, mon puits, ma santé*, individuals can pick up water testing equipment from their municipality. They can then bring their water sample back to the municipality, which takes it to the laboratory. Individuals can also benefit from lower prices by purchasing as a group.

To find an accredited laboratory, you can consult the website of the [Ministry of the Environment, the Fight Against Climate Change, Wildlife and Parks](#).

### 2 Information sharing with citizens and neighbours!

Some well owners do not think they need to test their water. This program gives people an opportunity to discuss the issue with trusted advisors. The municipality selects volunteers who are committed to the community and can help take an informed decision.

### 3 Understanding the analysis: you are not alone!

The project's website (<https://moneaumonpuits.ca/>) is clear and concise, featuring a wealth of valuable information, all in one place. The website also offers support for interpreting water test results. Users can enter their results online and receive feedback on the safety of their drinking water. If the water is contaminated, the website's tool provides simple tips to protect the family's health and suggests steps to correct the situation. Well owners can also contact their municipality if they want personalized assistance.

## Climate Change and GROUNDWATER

Wells connect us to water located at varying depths underground. Climate change could affect the quantity and quality of available groundwater. In some regions, climate change may cause droughts, which in turn reduces the quantity of available groundwater.

The rising sea levels from climate change can potentially contaminate groundwater as well, when salt water encounters fresh water. The changing climate can also increase the risk of flooding. If the flooding carries saltwater from the higher sea level, it can seep through breaches in the soil and contaminate the groundwater. Remember: almost 98 percent of the water on earth is saltwater. This means it is extremely important to protect freshwater, including groundwater.

Alice Moreard,  
Research Professional  
at UQAR during a campaign  
sampling to test salinity  
water from private wells  
coastal (O'Salis Project)





# TIME FOR GENACTION!



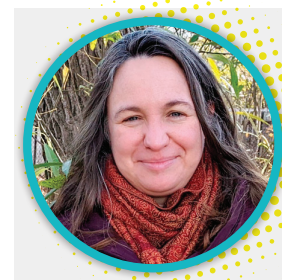
ON A COSMIC SCALE, LIQUID WATER IS RARER THAN GOLD.  
— Hubert Reeves

## MEET OUR LOCAL SCIENCE HEROES:



**François Lajoie**

François Lajoie is a UQAR graduate in project management, François has been involved in watershed management for twenty-four years. François is an agronomist and manages the OBV de la Côte-du-Sud team to preserve or improve water quality and biodiversity through various initiatives.



**Tamari Langlais**

Tamari Langlais is the coordinator of *Mon eau, mon puits, ma santé*. She first understood the value of drinking water when she lived in Port-à-Piment, Haiti. There, she had to draw water with a bucket and rope, then boil it before drinking. Thirsty work! Her favourite quote about water is from Hubert Reeves: "On a cosmic scale, liquid water is rarer than gold."



**Simon Arbour**

Simon Arbour is a supervisor and consultant for *Mon eau, mon puits, ma santé*. Raised on the shores of the Rivière du Sud in Bellechasse, Simon's love of nature inspired him to study biology and forest ecology. Water, which gives life and is soul-nourishing, is immensely important to him, both professionally and personally.

## Try This at Home:

### WHY SHOULD WE NOT DRINK SALT WATER?

You should not drink saltwater because it will only make you thirsty! Why is that? First, you should know that water is automatically attracted to anything that has higher concentrations. This is known as the phenomenon of osmosis. For instance, if saltwater seeps into the ground, fresh water will be drawn to it and mix with it.

Our bodies contain small cells that are necessary for us to function. These little cells also contain some water. If you drink saltwater, the water inside the cells goes away to combine with the salt water in your stomach. This makes your cells thirstier! Eventually, the saltwater in your stomach is filtered by your kidneys. You end up losing more water than you take in!

You can try this out using gummy bears. Fill two glasses with tap water. Add three tablespoons of salt to one of the glasses and mix well. Take two gummy bears and place one in each glass. Keep a third gummy bear dry.

Leave the gummy bears in the glasses for twenty-four hours before removing them. Do they look different? Compare them to the third gummy bear. Which of the two bears that were in the water looks thirstier?

## Climate Action:

### SPEAK UP!

If you do not know where you are getting your water from, check with an adult in your family to see if you get your water from a private well and then ask if the water has been tested! If you know anyone else who owns a well, you can ask them if they have recently had their water tested. Share anything you know about why it is important to test well water. Even if the water is clear and tastes good, testing is the only way to be sure!

You can do your part by reducing water consumption, avoiding water pollution, and educating others about water. Whether it comes from a well or any other source, our water is precious! The *Mon eau, mon puits, ma santé* project always welcomes ambassadors to share valuable information about the importance of testing well water.



# Climate Change

## Past, Present, and Future

Earth is the only planet in the solar system known to support life. What makes our home so special? Earth has an atmosphere, a layer of gases between our planet and space. Some of these gases, like carbon dioxide, are called **greenhouse gases**. They are crucial parts of our atmosphere; they trap in the heat of the sun, similar to how heat is trapped in a greenhouse, or in a car on a hot day. This process, called the **greenhouse effect**, keeps Earth's temperature warm enough for living things to thrive.

The sun's rays hit our round, tilted planet unevenly. This uneven heating of Earth's surface leads to differences in temperature, which drives weather patterns. We call the patterns in temperature and weather over long periods of time **climate**. Different parts of the world have vastly different climates; it depends on how much heat they receive, as well as what landscape features are nearby. Water, mountains, ocean currents, and forests all impact our climate. In turn, living things around the world have adapted to the climate they live in.

Something, though, is changing. Over the past two hundred years, humans have been burning fossil fuels, such as coal and oil, to make energy to power our daily lives. Fossil fuels are made from decomposed plant matter and microscopic life millions of years old. This matter is full of carbon, and, burning it releases, or emits, billions of tonnes of **carbon dioxide** gas into the atmosphere every year. When too much carbon dioxide is emitted, the delicate balance of greenhouse gases maintaining

Earth's climate is upset. More and more heat is trapped, causing the planet to warm. Weather patterns change, water levels rise, storms get worse.

Climate has changed many times throughout Earth's history, from ice ages to periods much hotter than today. So why is this time any different? Scientists agree on two things. One, temperatures are rising faster than they ever have in documented climate history. Two, this climate change is driven by human activities, due primarily to greenhouse gas emissions. Climate change is already impacting people's ways of life all over the world. Powerful storms, droughts, forest fires, and floods are threatening people's access to food, water, and safe homes.

The most important step we can take to prevent serious climate change is to reduce greenhouse gas emissions. Incredibly brave and caring people around the world are finding new ways to reduce emissions and make our communities climate resilient every single day. And you can join them! These Science Spotlights are here to help us learn more about climate change and how you can take action.

## Our Commitment to the Decolonization of Science

Institutions of GenAction initiative respect and affirm the inherent and Treaty Rights of all Indigenous Peoples across what we now know as Canada. We give thanks to the Indigenous Peoples who care for this land since time immemorial and pay respect to their traditions and ways of knowing. We acknowledge their many contributions to innovations in Science, Technology, Engineering, and Mathematics, past and present, and are committed to deepening engagement and collaborating with Indigenous Peoples as partners in order to advance truth and reconciliation and the decolonization of science.

