

# The SEEDS Canadian Water Conservation Challenge



## Take the Plunge

The SEEDS Canadian Water Conservation Challenge is an invitation from the SEEDS Foundation to students in Canada to take action to protect and preserve Canada's fresh water resources. *Take the Plunge* suggests a number of actions that everyone can do to help ensure that Canadians have sufficient water to sustain our ecosystems, communities, and the economy. Let's work together to minimize our use of fresh water.

**It's Easy To Do . . . And Absolutely Free.**

FREE Rewards for every participating student!



Seeds

Environment. Energy. Education.

devon

# *Water: Nothing Like It On Earth*

Water is one of the most plentiful and important substances on Earth. However, of all Earth's water, only a very small portion is fresh water, and of this, only a fraction is available for our use. Most Canadians are fortunate to readily have access to safe, clean water and as a result, we sometimes take it for granted. When we take a moment to think about the impact water has on our lives, we soon realize how important it is.

Together with food and air, water is a vital substance that supports all life. Living organisms depend on water to dissolve and transport nutrients, and it is the medium in which all biological functions occur. It even helps regulate our body temperature. About 60% of our body is water and we eat, drink, and expel nearly 2.4 litres of water daily. However, our daily consumption of water for washing, flushing, bathing, and cleaning is over ten times that amount. This amount of water is nearly three times the amount used by people in Europe.

Environment Canada suggests that we should be informed about the increasing demands being placed on our country's water resources and the need to ensure their sustainability. See this web site for more information: [www.ec.gc.ca/water](http://www.ec.gc.ca/water).

## *Be a Water Sleuth – Discover Some Properties of Water.*

**Activity 1:** Fill two identical 500ml plastic soda bottles half full of tap water. Label them A and B. Add several tablespoons of salt to bottle A, screw the cap on and shake to dissolve the salt. Put both bottles into the freezer for a day. What happens?

**Activity 2:** Fill a glass with water. Take a thumb tack and very gently place the head of the tack on the surface of the water allowing it to float. Now carefully add 2 drops of dish detergent to the water in the glass. What happens?

Check "AQUA FACTS" inside for explanations.




Students at University Elementary School in Calgary, gathering information for their Bow River study.

# What Do You Know About Water?

Challenge yourself with the following True/False statements to find out what you know about water. Try these 10 questions and then find out more by checking your answers inside.

## True or False

- 
1. Rain, hail and snow provide Earth with new sources of water.
  2. Humans eat more water than they drink.
  3. Water can dissolve more substances than any other liquid.
  4. Water is the only naturally occurring substance that is found on Earth as a solid, a liquid, and a gas.
  5. Falling raindrops are shaped like tears.
  6. The purest possible water is what aquatic life depends upon for health.
  7. The greatest home use of water in Canada is for drinking.
  8. Like most other liquids, water contracts (gets smaller) when it freezes.
  9. Approximately 3% of the water on Earth is fresh water.
  10. The largest fresh water lake entirely in Canada is Lake Superior, located in Ontario.



## *Every Drop Saved Counts.*

Water is so readily available to us that we seldom stop to think about the bargain we are getting each time we turn on a faucet. Treated water appears in our homes only after an extensive and expensive treatment process, and after a lengthy trip through kilometres of pipe. Becoming involved in water conservation actions means doing the same things you always have done with water, BUT using less of it!

Conservation in any way, big or small, makes sense because it helps ensure we have the water we need and it protects ecosystems. Because we all share the same water, it makes sense that we work together to preserve and protect it.

*It's Action Time -*

*Take the Plunge into the SEEDS Canadian Water Conservation Challenge!*

# Aqua Facts



## Kitchen Water Cops

- Many garborators use more than a glass of water per second.
- Faucet aerators mix water and air and reduce the volume of water by almost one half.
- Each dishwasher cycle uses between 20 and 50 litres of water.
- A continuous flow from a kitchen tap may use 4 to 5 litres of water per minute.



## Lost In The Wash

- Next to the toilet, washing machines use most of the water in the average home.
- Operate only full loads of washing to conserve water. Each load cancelled can save from 100 to 170 litres of water.
- Use laundry products sparingly. They can reduce the surface tension of fresh water, making it impossible for some surface dwelling insects to survive.
- Ample presoaking time often allows water to work its magic as a solvent.



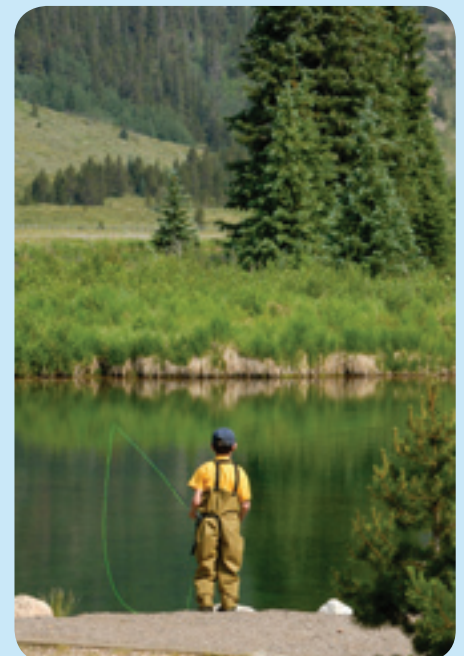
## Water First Aid

- A garborator increases the amount of organic waste being added to waste water, placing an extra and costly burden on waste water treatment plants.
- When water flows over surfaces like driveways, sidewalks, roads, and lawns, it collects debris, chemicals, and other pollutants before entering a storm sewer. Anything entering a storm sewer system is usually discharged untreated into freshwater systems ... reservoirs, lakes, rivers, or wetlands.
- Make use of municipal waste disposal facilities instead of using the drain.



## Bathroom Hydro Hunters

- A shower generally uses less water than a bath.
- Save as much as 4 litres per minute by turning off the water when brushing your teeth.
- Placing a toilet dam (sealed plastic bottle filled with sand or water) in your toilet tank can save an average family over 45,000 litres of water per year.
- A dripping faucet could allow as much as 50 to 75 litres a day to go down the drain.
- Avoid using the toilet as a garbage can. A toilet can use up to 15 litres of water per flush.



### Squirts of Action



- Plants love rainwater because it does not contain the chemicals used to purify our drinking water.
- A garden hose can use up to 100 litres of water in 5 minutes... instead use a broom for outside clean ups.
- Much of the water that is used is hidden! For example, it takes approximately 300 litres of water to produce 1 kilogram of paper.
- Be conscious of water conservation when dining out... it can take up to two glasses of water to wash each glass used in a restaurant.
- Awareness of water conservation is one thing, but positive actions are what makes the difference!



## *Fresh Water Conservation – An Environmental Impact that Everyone Can Make*

Everyone can make a significant contribution to Canada's natural environment by reducing unnecessary levels of water use. Because our water use almost always leads to some degree of deterioration in water quality, the more we are able to minimize the water we use, the less we upset aquatic ecosystems and the less we have to spend on restoring water quality. Take the Plunge encourages all of us to take at least one action each day to conserve and preserve Canada's fresh water resources. Every drop counts.

### *Racking Up Results... Claim Your Free Student Rewards!*

Submit your water conservation tally to the SEEDS Foundation. We will send your class a SEEDS Water Conservation Certificate plus a reward for each participating student (postage paid by SEEDS). Also, your group or school's name will be included on the SEEDS Canadian Water Conservation Registry. Submissions will be accepted until May 1, 2008.

SCHOOL NAME: \_\_\_\_\_ GRADES: \_\_\_\_\_

SCHOOL ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ PROVINCE: \_\_\_\_\_ POSTAL CODE: \_\_\_\_\_

PHONE NUMBER: ( ) \_\_\_\_\_ FAX NUMBER: ( ) \_\_\_\_\_

EMAIL ADDRESS: \_\_\_\_\_

SCHOOL CONTACT OR TEACHER'S NAME: \_\_\_\_\_

NUMBER OF STUDENTS:  NUMBER OF WATER CONSERVATION ACTIONS:

**REWARD REQUEST:**  FISH ERASERS  FLEXIBLE RULERS  FROG STICKERS  FROG TEMPORARY TATTOOS

Please note: the actions of each class participating in the SEEDS Canadian Water Conservation Challenge count toward your GREEN School status regardless of whether you are working towards your school's Green, Jade, Emerald, Earth, or Earth II project status.

More information about the SEEDS Green Schools Program can be found at: [www.seedsfoundation.ca](http://www.seedsfoundation.ca).

The complete totals for your group can be faxed or emailed to the SEEDS Foundation.

**SEEDS FAX: (403) 221-0876**

Email: [seeds@telusplanet.net](mailto:seeds@telusplanet.net)

Mail: SEEDS Foundation

400, 144 - 4th Avenue S.W.,  
Calgary, Alberta T2P 3N4

**\*\*IMPORTANT\*\*** Please do not send all the individual tally forms.  
Only this page needs to be sent in to the SEEDS Foundations to receive your class rewards.

# Answers To “What Do You Know About Water?” True/False Quiz

QUESTION	ANSWERS
1. <b>False</b>	The amount of water on our planet has been the same for billions of years. No new water has been created. The water we have on Earth keeps cycling around and around. Rain, hail, and snow are a part of the never-ending hydrologic (water) cycle. The warming of surface water in the oceans and on land by the Sun powers the water cycle. When surface water evaporates into the atmosphere, some of the water vapour forms clouds. When this water vapour cools, it condenses and often falls to Earth's surface as precipitation, such as rain, snow, or hail. Some precipitation soaks into the ground, some precipitation collects on the surface to form lakes, rivers, ice, snow and other precipitation evaporates and continues the hydrologic cycle again.
2. <b>False</b>	Each day humans take in and expel an average of 2.4 litres of water. We take in about 1.4 litres of water in the liquids we drink, and about 0.7 litres of water in the food we eat. We make about 0.3 litres of metabolic water when our cells release energy from the food we eat. Although some foods, such as fruit and vegetables, have a very high water content (usually over 80%), other foods, such as meats, are between 45% and 60% water. Crackers and nuts usually contain less than 5% water.
3. <b>True</b>	Although not all things dissolve in water, it is often referred to as the “universal solvent” because of its ability to dissolve more substances than any other liquid. Liquids such as acids might dissolve many substances, but there are no acids that can dissolve as many substances as water.
4. <b>True</b>	Water is extraordinary. It is the only substance on Earth that exists in three physical states of matter: solid, liquid, and gas. Water freezes into ice at 0° C and forms a gas (vapour) when it boils at about 100° C. Between freezing and boiling, water is a liquid.
5. <b>False</b>	Using high-speed cameras, scientists have discovered that raindrops are actually shaped much like small hamburger buns.
6. <b>False</b>	Healthy water is often thought to be pure water, but healthy water in aquatic ecosystems usually contains suspended solids, microscopic organisms, nutrients, minerals, and oxygen.
7. <b>False</b>	Environment Canada estimates that the average Canadian uses 343 litres of treated water daily. Almost half of this goes unused down the drain! Flushing toilets, watering lawns, and washing clothes top the list for the greatest domestic use of water. Actually, less than 5% is used for drinking.
8. <b>False</b>	Most liquids, including water, contract (get smaller) when they cool. However, when water freezes it expands and becomes less dense. Therefore ice rises to the top in liquid water. This is why ice cubes float on your soda and pond water freezes from the top down.
9. <b>True</b>	Approximately 97% of the water on Earth is salt water found in oceans. We cannot drink salt water or use it in agriculture. Removing the salt from ocean water (desalination) is very expensive. Of the 3% of fresh water in the world, only about 0.1% is readily available as liquid water. The rest is in a solid form such as ice caps and glaciers.
10. <b>False</b>	Canada and the United States share Lake Superior. The largest fresh water lake entirely in Canada is Great Bear Lake located in the Northwest Territories.

# Be A Water Sleuth

## Aqua Facts

**Activity 1.** Pure water freezes at 0° C. However, if a substance is dissolved in water, then the freezing point of the water is lowered. You will probably notice that the salt water (Bottle A) does not freeze as solidly as the tap water (Bottle B). That is why salt is sometimes spread on streets in winter. It helps to prevent ice formation.

**Activity 2.** Water molecules have a strong attraction to each other and bind together to create a strong elastic like film, at the surface of the water. This is called surface tension and it permits the water to support substances heavier and denser than itself. This is why some aquatic insects can walk on water or lay their eggs at the water's surface. The thumb tack floats, as do some insects, because of the water's surface tension. They sink when the dish detergent is added because it reduces the attractions between the water molecules.

## PLUNGE DETAILS

SEEDS is asking you to keep track of the number of water conservation actions that your class or group completes in one week, then multiply this by four to get an approximate monthly total. You are invited to send this tally to the SEEDS Foundation (see details in the Racking up Results section) so SEEDS can mail you your free rewards and add your school or group's name to the SEEDS Canadian Water Conservation Registry.

The following checklist can be helpful.  
Please copy as necessary. Do not submit.

## SEEDS Action Checklist

[www.seedsfoundation.ca](http://www.seedsfoundation.ca)

### A. Kitchen Water Cops

1. Limit use of the garborator ... \_\_\_\_\_
2. Use an aerator on your kitchen faucet/tap ... \_\_\_\_\_
3. Run the dishwasher with a full load ... \_\_\_\_\_
4. Keep a pitcher of drinking water chilled in the fridge ... \_\_\_\_\_
5. Avoid continuous water flow from taps ... \_\_\_\_\_

### B. Lost in the Wash

1. Wash laundry when there is a full load ... \_\_\_\_\_
2. Use the correct amount of soap, bleach, softener ... \_\_\_\_\_
3. Avoid washing clothes after each wearing ... \_\_\_\_\_
4. Presoak heavily soiled/stained clothes ... \_\_\_\_\_
5. Use environmentally friendly washing products ... \_\_\_\_\_

### C. Bathroom Hydro Hunters

1. Take a quick shower instead of a bath ... \_\_\_\_\_
2. Turn off the water when brushing your teeth ... \_\_\_\_\_
3. Install a toilet dam in the water tank of the toilet ... \_\_\_\_\_
4. Turn off taps tightly to stop water dripping ... \_\_\_\_\_
5. Check the toilet for water leaks ... \_\_\_\_\_

### D. Water First Aid

1. Use environmentally friendly household products ... \_\_\_\_\_
2. Compost your organic waste ... \_\_\_\_\_
3. Prevent the discard of hazardous waste into storm sewers ... \_\_\_\_\_
4. Use chemical fertilizers sparingly ... \_\_\_\_\_
5. Use municipal waste disposal sites instead of the drain ... \_\_\_\_\_

### E. Squirts of Action

1. Collect rainwater or melt snow for plants ... \_\_\_\_\_
2. Do outdoor cleanups with a broom ... \_\_\_\_\_
3. Reduce, Reuse and Recycle ... \_\_\_\_\_
4. Request water only when you plan to drink it ... \_\_\_\_\_
5. Involve friends and family in water conservation actions ... \_\_\_\_\_

### F. Other Water Conservation Actions: ... \_\_\_\_\_

TOTAL ACTIONS:

Name: \_\_\_\_\_

[www.seedsfoundation.ca](http://www.seedsfoundation.ca)



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### SEEDS Foundation

400, 144 - 4th Avenue S.W., Calgary, Alberta T2P 3N4

[www.seedsfoundation.ca](http://www.seedsfoundation.ca)

Ph: (403) 221-0884 Direct: (800)-661-8751 Fax: (403) 221-0876

The goal of SEEDS is to promote environmental stewardship based on bias-balanced scientific realities. All of our programs are Monday-morning ready and support the curriculum of all ten provinces and three territories. We offer seven programs for K-12 Canadian teachers and students.

SEEDS promotes inter-connectedness with other environmental initiatives. Our 2007 BIRD Challenge will be cross-promoted with the Robert Bateman Foundation. The web portion of our Energy Literacy Series (ELS) and Creating a Climate of Change (CCC) are being linked with other appropriate resources like the Canadian Centre for Energy Information, Environment Canada, and Climate Change Central.

- ✓ Many of our programs offer student and class rewards free of charge.
- ✓ Stewardship actions generated by a school's involvement in other environmental initiatives can be counted towards a GREEN School tally.



"Take the Plunge" celebrates 1 Million fresh water conservation actions taken across Canada



### Devon Canada is committed to water management

Water is a valuable resource, and responsible management is an important issue for all Canadians. It is a vital part of the ecosystem, and supports the health, social, and economic well-being of this country. Devon continues to work with governments, regulators, the public, commercial users, and other stakeholders to define needs and expectations, and support a sustainable long-term water management strategy that balances ecological, economic, and social values.

Devon is committed to the following water management objectives, based on the principles of reduction, conservation, and recycling in all aspects of operations:

- Comply with or exceed applicable regulations pertaining to the use of fresh water.
- Apply conservation practices.
- Track fresh water use.
- Review alternative economic options to fresh water use.
- Identify opportunities to improve efficiencies in fresh water use.
- Protect surface water and groundwater from contamination.
- Share expertise and knowledge with stakeholders in furthering the proper management and use of fresh water.
- Educate employees on the issues surrounding fresh water and ensure Devon's policies towards its use are followed.

*Devon Energy Corporation is one of the world's leading independent oil and gas exploration and production companies. The company's portfolio of oil and gas properties provides stable, environmentally responsible production and a strong platform for future growth. Devon's Canadian production includes conventional oil and natural gas resources, cold-flow heavy oil and thermal heavy oil. Headquartered in Oklahoma City, Devon is a Fortune 500 company and common shares trade on the New York Stock Exchange under the ticker symbol DVN. For more information about Devon, please visit our website at [www.devonenergy.com](http://www.devonenergy.com).*

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