

Safe Drinking Water Foundation Educational Programs



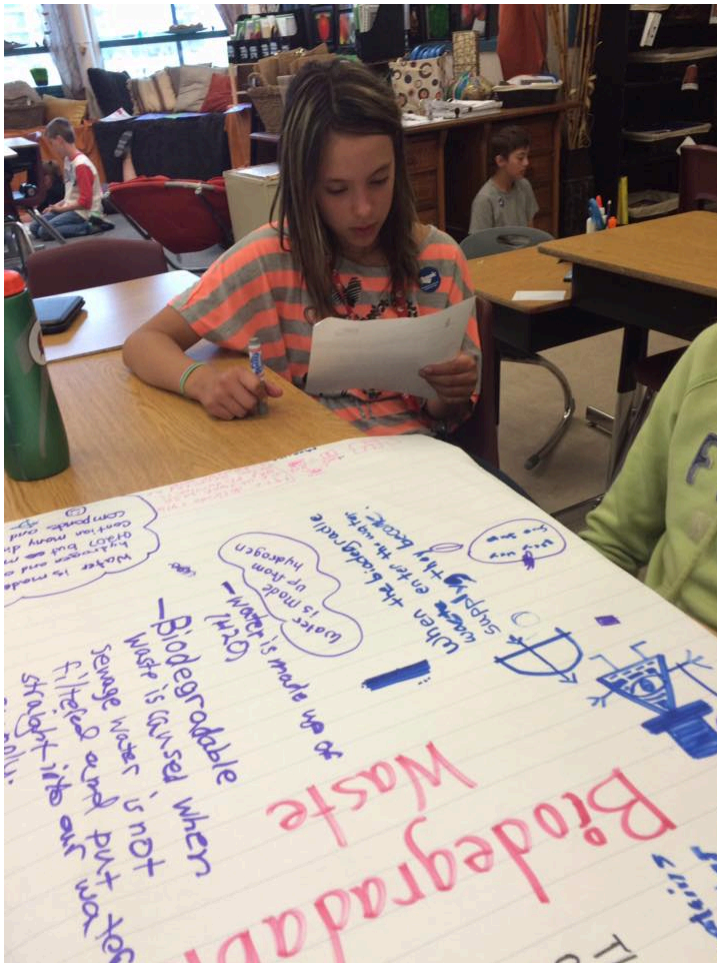
SDWF Mission



We will educate the leaders of today and tomorrow about drinking water quality issues to realize our goal of safe drinking water being available to every Canadian.

SDWF became a registered Canadian charity in 1998 and started sending educational kits to schools in 2001.

SDWF Knowledge and Fact Sheets

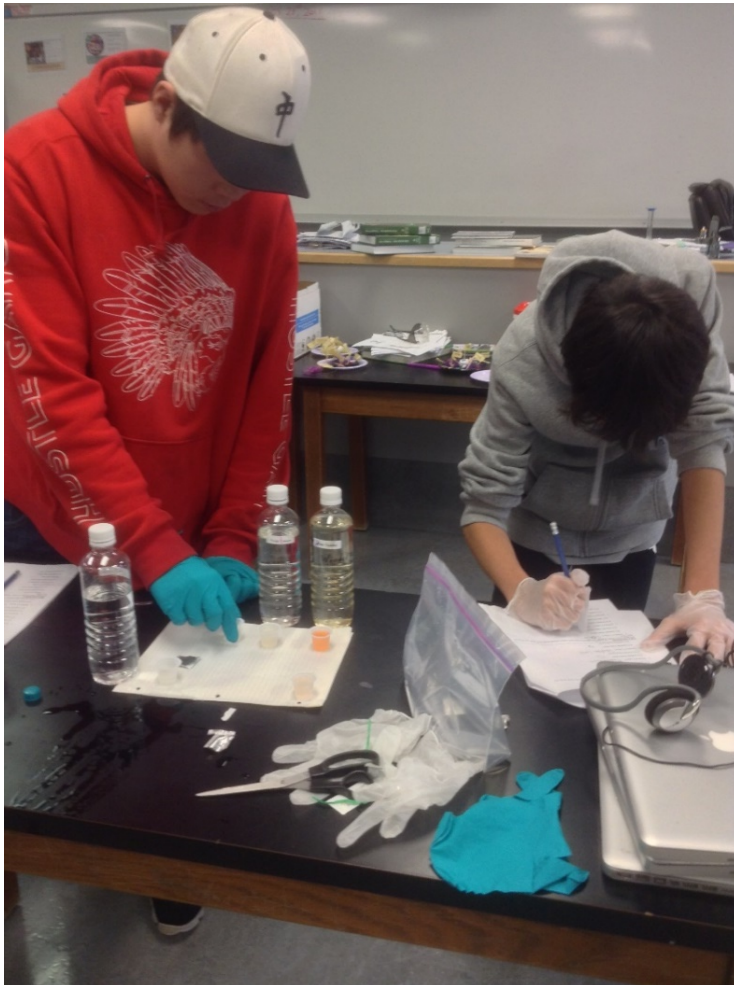


There are 72 comprehensive free Fact Sheets on SDWF's website (www.safewater.org/fact-sheets).

A wide range of topics, including waterborne illnesses, social justice issues around water, climate change, lead in drinking water & chlorination.

The focus is on youth becoming informed citizens (consumers, voters, participants) who are environmentally literate.

SDWF School Programs



- Available to all schools anywhere in the world!
- All lessons are available on SDWF's website (www.safewater.org).
- Curricula connections for respective provinces and lessons are listed online.
- All of our water testing kits and most of our educational programs and fact sheets are available in French as well as English. Additionally, some of our Operation Water Health information is available in Cree.

SDWF School Programs



- SDWF has received an award from the Regional Centre of Expertise on Education for Sustainable Development for their Operation Water Biology program.
- SDWF has published a paper about their educational programs in Our Schools/Our Selves, the Canadian Centre for Policy Alternatives' quarterly journal on education (V.21 N.1 #105, Fall 2011).
- Available Programs: Operation Water Drop, Operation Water Pollution, Operation Water Biology, Operation Community Water Footprint, Operation Water Health, Operation Water Flow and Operation Water Spirit.

SDWF School Programs



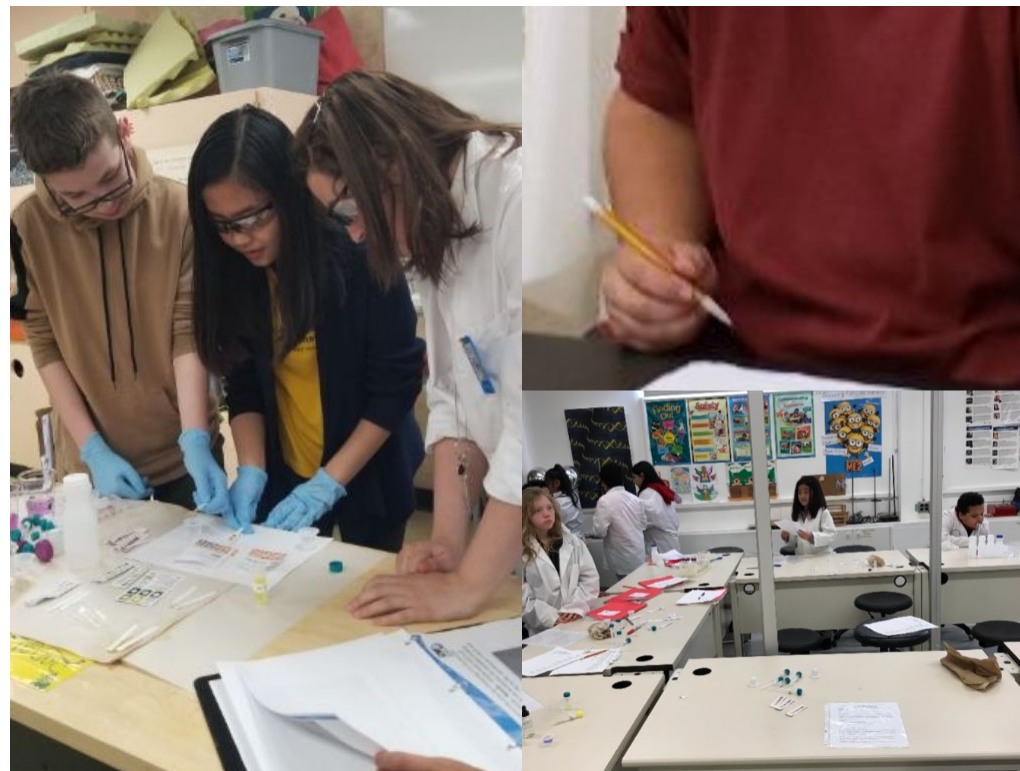
- Have a strong demand (substantial waiting list for sponsored kits).
- Have been used by over 3100 different schools across Canada.
- Have been used at the University of Saskatchewan, University of Winnipeg, Vanderbilt University (Nashville, Tennessee), Virginia Commonwealth University (Richmond, Virginia), Nelson's Youth Water Festival, and the Royal Ontario Museum.
- Are offered to schools through Connected North.

SDWF School Programs

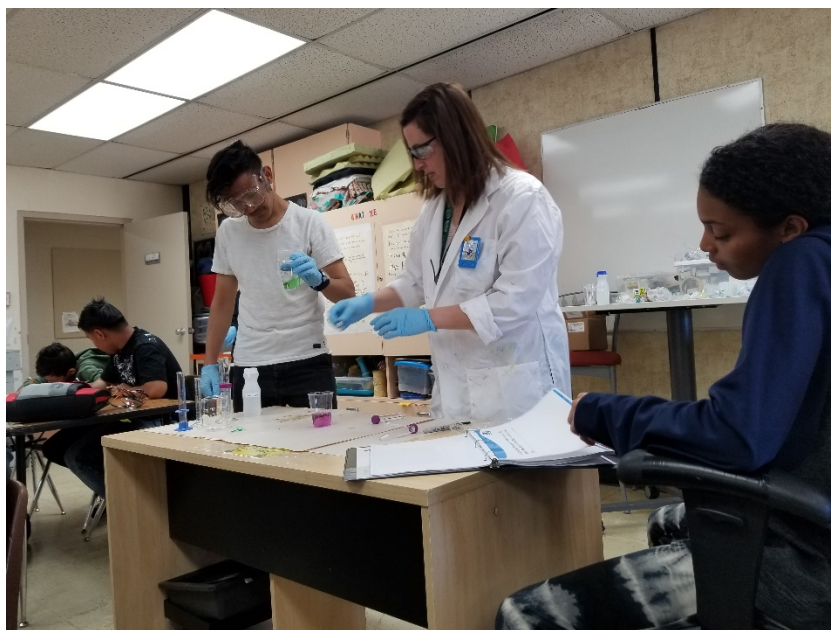
- Operation Water Drop (OWD) – Elementary and High School kits that test for various water components in their local drinking water.
- Operation Water Pollution (OWP) – students learn about water pollution – including what it is, what causes it, and how it can be cleaned up!
- Operation Water Biology (OWB) – kits that show students how biological water treatment works
- Operation Water Spirit (OWS) – free program on SDWF's website
- Operation Community Water Footprint (OCWF) – free program on SDWF's website
- Operation Water Health (OWH) – free program on SDWF's website
- Operation Water Flow (OWF) – free program on SDWF's website

Operation Water Drop (OWD)

Elementary and High School OWD kits are distributed to schools from the middle of September until the middle of November and from the beginning of March until the end of May.



Operation Water Drop (OWD)



- **Elementary teachers** can demonstrate eight scientific tests on their own community drinking water: alkalinity, ammonia, colour, copper, total hardness, total chlorine, pH and sulphate. Elementary students test their own local drinking water and control water samples.

- **High School teachers** can guide their students to work in groups

and test for the above eight components, as well as an additional four analytical tests: arsenic, iron, manganese and nitrate. High school students test five water samples.

Teachers can enter their students' results by using the code included in their kit. This engages students in citizen science! Entered results are displayed on a map and can be viewed by anyone who visits the website.

Operation Water Drop (OWD)

- The OWD program encourages students to develop critical thinking skills which will empower them to become actively involved in issues such as ensuring safe drinking water within their community, and on a global scale.



Operation Water Drop (OWD)

Operation Water Drop is available for a cost recovery fee of:

- **Elementary Schools - Grades 4 to 8: \$85** (or \$76.50 for a less plastic kit, discounts are also available for teachers who have an order of \$350 or more sent to one address and for teachers who are able to pick their kits up from our office in Saskatoon)
- **High Schools - Grades 9 to 12: \$170** (or \$153 for a less plastic kit, discounts are also available for teachers who have an order of \$350 or more sent to one address and for teachers who are able to pick their kits up from our office in Saskatoon)



- Various funders sponsor kits for schools across Canada or in specific geographic regions.
- Teachers can apply to their local service clubs, local companies and other organizations, and through different programs for funding if sponsored kits are not available for their school.
- Contact info@safewater.org for more information.

What Teachers Have Said About OWD

“It is great. Thank you so much for everything we have received from you. The supplies and equipment are wonderful, well prepared, easy to use for teaching in the lab settings.” – Christina S. and Dorota P., St Joseph High School, Edmonton, AB

“There were complaints about the water fountain... so we tested it! Then we reported back to our school community council. Now they will purchase a reverse osmosis system for the water fountain! We supplied the data to them.” – Donna A., Drake School, Drake, SK

“This is an awesome resource that is otherwise difficult to source. I can't think of an improvement for this fabulous program - Thanks!” – Paul H., Sunningdale Public School, Oakville, ON

“These kits really add to our classroom learning experience. Of course there are always cutbacks, so the fact that we can access these kits through sponsorships is so very appreciated. I have to get creative with using the kits provided because I teach science to 150 students in grade 8.” – Haley C., R. Ross Beattie Senior Public School, Timmins, ON

Operation Water Pollution (OWP)



- Designed for use in both elementary and high school classrooms.
 - Directly connects with science and social studies curricula and is set up as content-integrated lessons.
 - The series of eleven lessons guides students through an examination of water pollution issues.
 - The students discover how water pollution is reversed and what they can do to affect change in their community with regards to water pollution.
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- Every lesson includes additional suggested activities and resources, along with references to other sources of information.
 - Teachers can enter their students' results by using the code included in their kit. This engages students in citizen science! Entered results are displayed on a map and can be viewed by anyone who visits the website.

Operation Water Pollution (OWP)

How it works

- Lesson plans, PowerPoint presentations and all resources are available online. All material is downloaded by the teacher for review prior to receiving the digital TDS and pH meters.

Cost

- The cost of an Operation Water Pollution kit is \$170 (discounts are available for teachers who have an order of \$350 or more sent to one address and for teachers who are able to pick their kits up from our office in Saskatoon) and includes both a digital TDS and a digital pH meter. These meters can also be used to measure the temperature of the water. The meters are guaranteed for at least two years. Various funders sponsor kits for schools across Canada or in specific geographic regions.

End Goals

- Students develop definitions of polluted drinking water that serve as the backbone for the other lessons in this program.

What Teachers Have Said About OWP

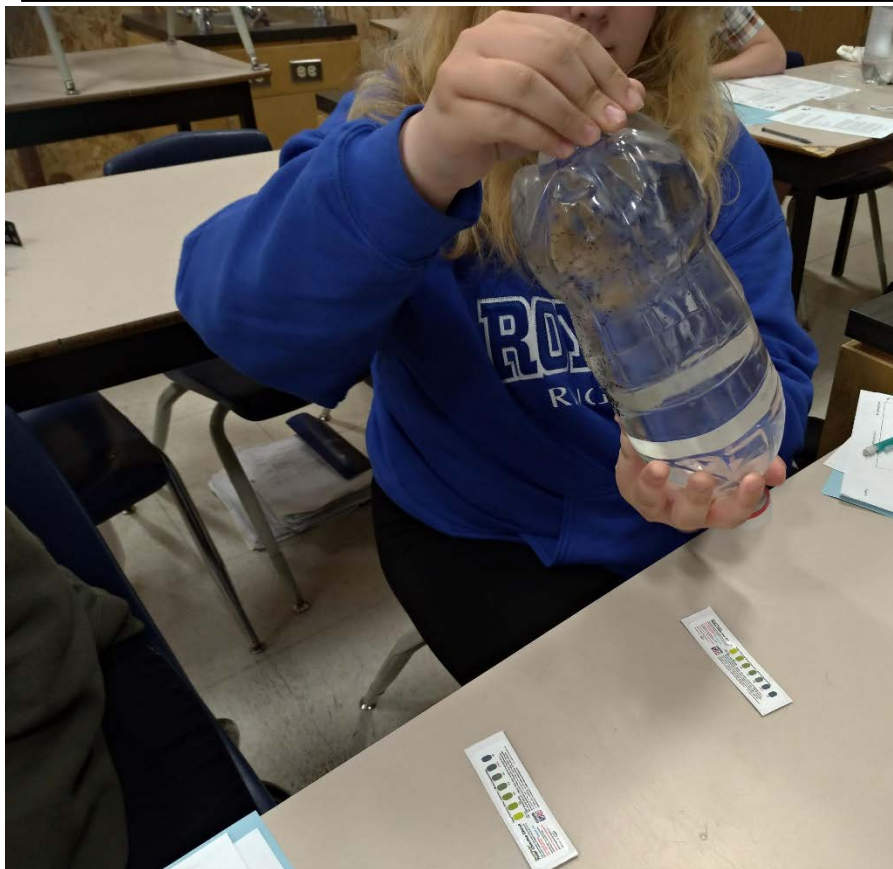
“The materials were simple to use and reliable. The students enjoyed using the digital meters.” – Amy C., Sussex Regional High School, Sussex, NB

“The kits really help our efforts to increase hands-on real time learning. I didn't even have a pH meter before!” – Hayley T., Edison School, Okotoks, AB

“Excellent resource. With school budgets being very thin, this is a great resource being provided for us.” – Lee V., Stanley Knowles School, Winnipeg, MB

“This is a great program. I am glad I heard about it and I plan to continue using Operation Water Pollution with more of my classes next year.” – Tara F., Aden Bowman Collegiate Institute, Saskatoon, SK

Operation Water Biology (OWB)



- A series of eight lesson plans designed for use with students in grades nine to 12.
- Directly connects with science, chemistry and biology curricula.

Covers a few different aspects of drinking water treatment; the major topics are chlorine, chloramine, ammonia and iron. For each of these there is a discussion explaining what it is and its importance to drinking water treatment. There are also lab activities for each that allow

students to work with small amounts of these substances and see them in action.

Operation Water Biology (OWB)



- Students will demonstrate the idea of chlorine demand, create chloramine through a simple chemical reaction, test local samples of drinking water for chlorine and ammonia, and filter water samples with iron oxidized by different processes to determine if one is superior.
- Every lesson includes additional suggested activities and resources, along with references to other sources of information.

Operation Water Biology (OWB)

How it works

- Lesson plans and all resources are available online. OWB kits are sent on the same distribution dates as OWD kits.

Cost

- The cost of one OWB kit is \$170 (discounts are available for teachers who have an order of \$350 or more sent to one address and for teachers who are able to pick their kits up from our office in Saskatoon). Various funders sponsor kits for schools across Canada or in specific geographic regions.

End Goals

- Students will learn about the chemical reactions and biological interactions involved in drinking water treatment processes and understand how useful and important applied science can be. Students will have interesting, meaningful, and educational laboratory experiences. Students will develop an appreciation for environmentally friendly engineering solutions and an interest in pursuing scientific endeavours.

What Teachers Have Said About OWB

“This is a fantastic opportunity to teach students about the source of their water and using it sustainably.” – Gayle M., Moira Secondary School, Belleville, ON

“This is an excellent program, providing useful materials and ideas for students.” – Cheryl B., Gimli High School, Gimli, MB

“Everything is always so well prepared - thank you.” – Nancy M., Tantramar Regional High School, Sackville, NB

“Thank you for providing this opportunity for our students.” – Janelle B., Stratford Cogito Campus, Edmonton, AB

Operation Water Spirit (OWS)



- OWS is a collection of thematic units and lesson plans that will reinforce Indigenous culture and perspectives regarding water for Indigenous students - while at the same time providing non-Indigenous students with an understanding of Indigenous perspectives on water.
- Operation Water Spirit invites teachers to engage students in classroom discussions to gain a closer understanding of Indigenous issues and perspectives surrounding drinking water.

Operation Water Spirit (OWS)

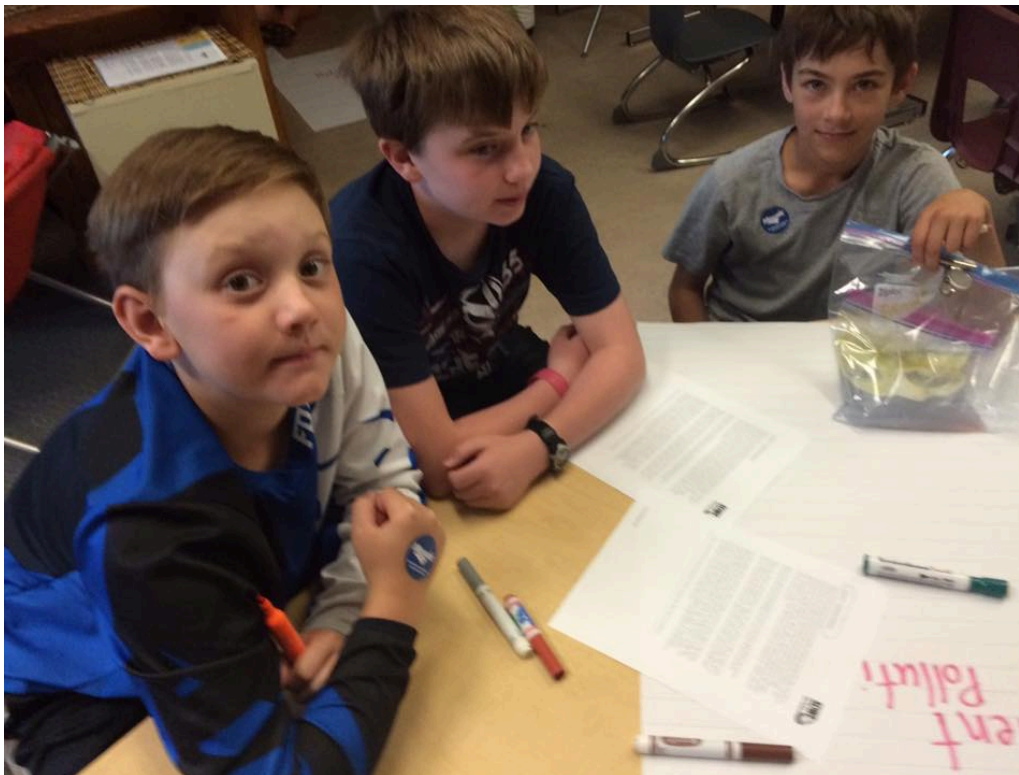
- OWS is available free of charge on SDWF's website (www.safewater.org).
- OWS is available for students in kindergarten to grade 12.
- Students will learn that not everyone has safe drinking water and that there is a great need for source water protection and water conservation.
- OWS was recently redeveloped.



Operation Water Spirit (OWS)

End Goals

- A closer relationship and understanding of water issues between Indigenous and non-Indigenous students.



Operation Community Water Footprint (OCWF)



- Available free of charge on SDWF's website.
- Designed for use with students in grades six to 12.
- Directly connects with science, social studies and math curricula and is set up as content-integrated lessons.
- Students learn about their local drinking water treatment facility and distribution system by undertaking a research project as a class.
- Students will calculate how much water (source water) is required to produce one litre of treated drinking water in their community (including water used in the treatment process, water lost in distribution, etc.).

Operation Community Water Footprint (OCWF)

End Goals

- Students will learn how much source water is needed to produce one litre of drinking water in their community, they will take action to make a difference regarding drinking water related issues in their community, and they will learn what actions people in other communities are taking to spread awareness of, and alleviate, drinking water problems.



Operation Water Health (OWH)

- Available free of charge on SDWF's website.
- Designed for use in both elementary and high school classrooms.
- Directly connects with health, science and social studies curricula and is set up as content-integrated lessons.
- Teachers may choose to present one of the lessons or all of the lessons depending on the material they find to be most suitable or applicable for their students.



Operation Water Health (OWH)

- Through a variety of activities and cooperative learning strategies, the students explore common disease-causing microbes found in water, how these microbes are removed or inactivated in water with water treatment, and the diseases these microbes cause when they are not identified and treated in drinking water systems.

End Goals

- Students develop definitions for both healthy and unhealthy drinking water and these definitions serve as the backbone for the other lessons in this program.

Operation Water Flow (OWF)



- OWF encourages teachers of math, chemistry, biology and social studies to support the science teacher by giving students a more thorough understanding of issues surrounding drinking water.
- Available free of charge on SDWF's website.

Operation Water Flow (OWF)

- OWF encourages students to establish the true cost of water (economic and environmental); the social responsibilities of providing safe drinking water; the need for national regulations; and the need for water conservation and source water protection, etc.
- It supports and encourages a broad understanding of information related to drinking water quality issues.
- OWF is available for grades six to 12.

How much water do Canadians use?

- In 2019, total water use in Canada was 411 litres per person per day (Statistics Canada, Survey of Drinking Water Plants, 2019).
- Canada uses more water per person than any other nation, except maybe the United States (depending on which year and which source you look at).
- The Grade 9 lesson “I Use THAT Much Water?!” looks at ways to conserve water.
- We can all do our part to conserve water!

Operation Water Flow (OWF)

End Goals

- That students develop a broad understanding of water issues. Also, that students conserve water and encourage others to conserve water.



Thank You!

For becoming part of the solution to make safe drinking water a reality for **everyone!**

Visit the SDWF website at www.safewater.org or contact us at info@safewater.org or 1.306.934.0389 for additional information about any of our educational programs.

