

General Suggestions for Teachers in Regards to Improving the Implementation of Safe Drinking Water Foundation Programs

Additional areas to discuss with your students (regardless of which program(s) you use)

- 💧 The importance of protecting source water, the following are some notes that the teacher can use during this discussion:

"The first barrier to the contamination of drinking water involves protecting the sources of drinking water."

- Justice Dennis O'Connor, Walkerton Inquiry 2002

Approximately 74 % of Canadians get their drinking water from surface water sources and 26% of Canadians use ground water to meet their daily water needs (municipal, domestic and rural).

Preventing contaminants from entering water sources is an effective way to help ensure clean drinking water and thus prevent human disease. This is important because there are many hazardous chemicals that conventional water treatment methods cannot effectively remove. While source water protection works to everyone's benefit, it is of particular concern for rural and First Nation consumers who typically do not have the same resources as urban centers. These are the communities who struggle the most when they are forced to treat poor quality source water.

According to the US Environmental Protection Agency (US EPA), remediating groundwater can be 40 times more expensive than taking steps to protect the water at the source. Preventing contamination at the source also reduces the costs of treating water later in the drinking water treatment process.

The United Nations warns that if current trends of wasting and polluting freshwater continue, two out of every three people on Earth will suffer moderate

to severe water shortages in little more than two decades. It is imperative that we take measures to protect water sources today.

Use the SDWF's Operation Water Pollution program (and order the Operation Water Pollution kit!) to teach students about water pollution and about protecting source water.

References:

Environmental Protection Agency. 2002. *Consider the Source: A Pocket Guide to Protecting Your Drinking Water*. Washington: Office of Ground Water and Drinking Water.

Pollution Probe. 2004. *The Source Water Protection Primer*. Toronto.

- 💧 Compare and contrast the conventional water treatment methods (using chemicals) versus biological water treatment (Integrated Biological Reverse Osmosis Membrane treatment system), for an in-depth look at this topic please look at the Operation Water Biology program (and order the kit!)

- 💧 Involve the students in discussions regarding water, their beliefs about drinking water, and their behaviour in regards to drinking water. Do they think that the water in their homes and/or at the school is safe to drink straight from the tap? Do they drink water straight from the tap? Do they drink bottled water? Does their family use any type of drinking water treatment system in their home? Do they know whether their tap water is from surface water or ground water? If your community does have safe drinking water, how would your life change if your community did not have safe drinking water? If your community does not have safe drinking water, how would your life change if your community did have safe drinking water? Many other questions can be asked.

Guest Speakers

There are many opportunities to invite guest speakers, the following are some ideas:

- 💧 A guest speaker could be invited to discuss water treatment methods (a scientist or an engineer, for example)
- 💧 The water treatment plant operator from your community could be invited to discuss water treatment in your community
- 💧 A member of a nearby First Nations community could be invited to speak to the class about water issues in his or her community

The following section, Field Trips, includes suggested steps to take to have a water treatment plant operator visit your classroom (or to visit a water treatment facility), these steps can also be used to arrange for other guest speakers to visit your classroom.

Field Trips

- 💧 Arrange a shore-line cleanup of a nearby waterway; involve the community, parent volunteers, etc. if possible
- 💧 Arrange for a tour of your local water treatment plant or for a guest speaker from the local drinking water treatment facility to come speak to your class. The following instructions may help you to do this:

Time: For a guest speaker, 60 minutes; for a visit to the local drinking water treatment facility, two hours

Space Requirement: For a guest speaker, any classroom or auditorium, etc.; for a visit to the local drinking water treatment facility, the local drinking water treatment facility

Methodology: Group Discussion, Experiential Learning

Objectives: Students will gain a better understanding of the process used to treat the drinking water for their community. Students will speak to, and ask questions of, a professional in the field of water treatment.

Directions/Procedure:

Between the options of a field trip to a treatment facility or a guest speaker it is likely that the more informative and enjoyable option for the students would be the field trip. This is also the option with the more difficult logistical problems so you will need to choose which would be better for your class, budget (in regards to whether you would need buses to take the students to the treatment facility), adult chaperones available, etc. Remember to ask the water treatment plant operators or the guest speaker to speak to your class well in advance in order to ensure that they will be available to speak to your class on a day when this would be appropriate considering the timeframe of your units. If you choose the option of having a speaker talk to your class, consider having the speaker give a general presentation to the entire school regarding safe drinking water and water treatment in a more general manner the same day that they speak to your class, and then join you and your students in the classroom for a more specific discussion based on the SDWF programs you have been learning.

1. When arranging for a tour or a guest speaker the presenters might like to know what you are expecting them to talk about. Let them know what grade level they will be talking to and how technical it would be appropriate for them to be.
2. They can speak, in general terms, about the process used to treat the local drinking water. Let them know what you expect the nature of your students' questions will be so they can be prepared to properly address these questions.
3. Have the students come up with some questions they would like to ask beforehand. For example, they might want to ask about which contaminants the facility tests for and how often they do the tests.
4. Consider making a thank you card for the speakers that all of your students sign. You may also want to give them a token of your appreciation (for example, a school/school division mug).
5. Visit the local water treatment plant or have the guest speaker come to the classroom. The students ask their questions and discuss water treatment issues with the speakers.

6. Thank the speaker. If your class decided to make a thank you card and/or to give the speakers a token of your class' appreciation then make the presentation at the end of their discussion.
7. After the speaker has left or the following day debrief with your students regarding what they learned from the experience.

Evaluation:

Students can be evaluated on the basis of good behaviour during the visit or trip and their participation in the discussion.

Related Links:

Conventional Water Treatment

www.safewater.org/fact-sheets-1/2017/1/23/conventional-water-treatment

Purpose of Drinking Water Quality Guidelines

www.safewater.org/fact-sheets-1/2017/1/23/purposeguidelinesregulations

Some Ideas of How to Help Struggling Learners

- 💧 Create outlines for lessons or for entire units so that students can visually see the order of what will be discussed, what activities will take place, etc.
- 💧 Provide students with a glossary of the terms that you will be using while teaching them about water issues.
- 💧 Have students make vocabulary cards for terms that they will need to use during the program/unit. They can use index/recipe cards for this with holes punched in them, putting them on a binder ring will help to keep them organized. They should put the term on one side of each card and the definition of the term as well as use the term in a sentence on the other side of the card. Encourage students to quiz themselves (either by looking at the term and trying to remember the definition or by looking at the

definition and trying to think of the term that matches that definition).

- 💧 Ask students to look words up in a dictionary if they do not understand them, then they can add these terms to their vocabulary cards.