Name: _____ Group: _____ Date: _____

STUDENT BOOK:	**Chapter 1, pp. 9, 19–20**
CONCEPTS:	HOMOGENEOUS AND HETEROGENEOUS MIXTURES MIXTURES AND PURE SUBSTANCES
METHOD:	FORMATION OF AN OPINION

MAKING A THOUGHTFUL CHOICE

Dieticians say that we should drink two litres of water a day. Authorities state that tap water is fit to drink. But is water quality the same everywhere? Does the water taste good? What about seasonal problems that sometimes make it necessary to boil water before drinking it? Health Canada maintains that tap water is just as good as bottled water. Yet, growing numbers of consumers are opting for bottled water anyway. Meanwhile, ecologists point out that tap water is more economical and less harmful to the environment because it produces less waste.

IDENTIFYING THE CONTROVERSY AND EXPRESSING YOUR VALUES

1. What question does this issue raise?

2. Do you think it better to drink bottled water or tap water? Why?

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3. Which of the following factors do you consider when choosing the water you drink?

Quality • Purity • Colour • Clarity • Cost
Odour • Availability • Content

4. Do you drink mostly tap water or bottled water? Give your reasons.

5. Do you trust the quality of the water you drink. Why?

GATHERING INFORMATION

Read pp. 9, 19–20 in your student book, as well as the appendix to this activity, for help in answering questions 6–12.

Complete the table on page 10 as you read. Remember to cite your sources.

6. Is tap water a pure substance or a mixture? Justify your answer.

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7. Is bottled water a pure substance or a mixture? Explain your answer.

8. What is potable water?

9. What processes are used to purify tap water?

10. Is tap water reliable? Why?

11. Is bottled water reliable? Why?

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12. What is the cost difference between the two types of water?

Sources of information

Source	Reliable source?	Reason	Impartial source?

FORMING YOUR OPINION

13. Based on the information you gathered, take a position on the issue and write a short opinion piece. Point out the advantages of the type of water you prefer, as well as the disadvantages of the other type of water. If you think it possible to reconcile the two points of view, write a text that justifies this opinion.

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REFLECTING ON YOUR APPROACH

14. What other information could help you support your position in this controversy?

15. Has your opinion about the two types of water changed since you began this activity? Explain why.

Name: _____ Group: _____ Date: _____

APPENDIX

1. BOTTLED WATER

Frequently asked questions about bottled water

What is bottled water?

Bottled water is water which has been packaged in sealed containers for human consumption. The water can come from a variety of sources including springs, aquifers, or municipal supplies and may be treated to make it fit for human consumption.

Are there bacteria in bottled water?

Yes, there can be. Bacteria are found in most bottled waters sold for drinking purposes. Bottled water is usually disinfected to remove harmful microorganisms but this treatment is not intended to sterilize the water. Sterile water is normally reserved for pharmaceutical purposes, as in contact lens solutions.

Can bottled water cause illness?

A bottled water could potentially cause illness if the water used for its production was untreated or inadequately treated to remove any disease-causing organisms it contained. This risk would also exist if the same water was used in a community water system for delivery from the tap. A bottled water manufactured from an inadequately treated source would be in contravention of the *Food and Drugs Act*.

How is bottled water regulated in Canada?

In Canada, bottled water is regulated as a food and therefore it must comply with the *Food and Drugs Act*. Section 4 of the *Act* prohibits the sale of foods which contain poisonous or harmful substances and section 5(1) of the *Act* prohibits the labelling, packaging, treating, processing, selling or advertising of any food in a manner that misleads or deceives consumers as to the character, value, quantity, composition, merit or safety of the product.

There are specific regulations for bottled water set out in Division 12 of Part B of the *Food and Drugs Regulations*. The regulations provide definitions for different types of bottled water and specify microbiological standards, acceptable treatments and labelling requirements for these products.

In addition to the *Food and Drugs Act* and *Regulations*, the Health Products and Food Branch also issue guidelines for bottled water and other products. These guidelines are published in the "Health Products and Food Branch Standards and Guidelines for the Microbiological Safety of Foods – An Interpretive Summary" published in the *Compendium of Analytical Methods*. As a result of microbiological surveys conducted across Canada, the Health Products and Food Branch has set guidelines for two additional bacteria (other than those in the Regulations) : *Pseudomonas aeruginosa* and *Aeromonas hydrophila*. These bacteria are indicators of poor "Good Manufacturing Practices (GMP)." The Canadian Food Inspection Agency and other health officials could test for these bacteria when the manufacturer is out of compliance and/or has been involved in food-borne outbreaks.

Standards for microbiological quality are based upon data collected through Canada-wide surveys on these products, reviews of international data, and consultation with bottled water associations, scientific experts and other clients involved in this industry. Based upon these consultations, Health Canada is bringing the microbiological standards in line and harmonizing with international standards. The *Food and Drugs Act* and *Regulations* are available on the Department of Justice's Web site.

Name: _____ Group: _____ Date: _____

1. BOTTLED WATER (*continued*)

Can bottled water be manufactured from municipal tap water?

Yes, except for mineral water or spring water. It is possible for bottled water to be produced from municipal tap water that has undergone a treatment process to lower the mineral content and/or remove chemicals such as chlorine.

Source: Health Canada Online, *FAQ about Bottled Water* (2009), accessed June 24, 2009.

Name: _____ Group: _____ Date: _____

2. TAP WATER

Quebeckers encouraged to drink tap water

An exposé published in the consumer magazine *Protégez-vous* encourages Quebeckers to renew their friendship with tap water, which is of good quality as a rule. By contrast, bottled water is not as closely regulated and costs far more.

The July [2006] edition of *Protégez-vous*, which goes on sale this Saturday, maintains that Québec's drinking water is very good, and there is usually no need for filter pitchers or faucet filters. In fact, it would seem that faucet filters generally promote significant proliferation of bacteria.

An average 1.6 million bacteria per 100 millilitres of water were counted in the residential distributors and 3 million per 100 millilitres in the workplace distributors that were examined. However, according to the World Health Organization, those particular bacteria are not harmful since they already occur in considerable abundance in fruits and raw vegetables without causing any problems.

The *Protégez-vous* exposé adds that the bottled water industry, which projects an image of purity, is subject to far less government regulation and control than public water supply systems are. What is more, it costs us consumers 500 to 1000 times more to open a bottle than to turn on the tap, not to mention the water tax that must be paid regardless of which water we drink.

Source: Presse Canadienne Website, accessed June 24, 2009. [*Translation*]