

Not a Drop to Drink?

Their local creek was so polluted that it was uninhabitable for fish and amphibians. It was a dumping ground for used tires, rusted car parts, and litter. The Grade 6 students at the elementary school near the river in Windsor, Ontario, wanted to do something about it.

They appealed to the Canadian Wildlife Federation for funding and, armed with rubber gloves and garbage bags, helped the community remove tonnes of debris from the river. Fish and wildlife now thrive in the river basin where students and volunteers have planted trees, erected bird shelters, and built bridges and walkways. The children have restored the river to a place that the local wildlife and community can enjoy.¹ Their success is testimony to the power of individuals working together to protect the environment.

A Flood of Crises

Some of our children's educational materials encourage positive action like the children's stream cleanup project. For example, *Rang-*

er Rick's *NatureScope* suggests that children contact the Adopt-A-Stream Foundation² to find out how they can restore a polluted waterway.

All too often, however, our children's texts treat water pollution as crises, not as a manageable problems. They fail to teach why we have water pollution.

First "Crisis": We Are Running Out of Water

Many textbooks observe that while three-fourths of the earth is covered with water, most of this water can't be used because 97 percent is salt water in the oceans and seas. Of the three percent that is fresh water, 2 percent is locked in the polar ice caps. This leaves only 1 percent available for use by plants, animals, and man.³ Although most textbooks state the fact that Canada has an abundance of fresh water, the impression is that there is not enough on the planet for world use, and that Canada needs to manage its water supply as carefully as some of the more drought-plagued countries.

- ◆ After condemning the wasteful western lifestyle, one text warns: "Some scientists say that, within a few years, we will no longer be able to find all the fresh water we need. Perhaps it would be more accurate to say the fresh water we want."⁴
- ◆ The geography text *Towards Tomorrow: Canada in a Changing World* suggests that "there is evidence that Canadians are about to enter a period of water scarcity."⁵ In fact, however, Canada currently consumes only about 1.5% of its total available renewable freshwater resources.⁶
- ◆ "Since the earth has so little fresh water, care must be taken not to use large amounts needlessly." The text goes on to say: "Global studies show that humans are now removing fresh water

from the land faster than the water cycle can replace it. In North America we use about twice as much water as the water cycle returns . . . sooner or later a limit will be reached.”⁷

Second “Crisis”: Our Drinking Water is Contaminated by Chemicals

- ◆ “Groundwater is also vulnerable to pollution,” writes the science curriculum supplement *Science Is* . . . “Just dumping common, everyday things on the ground can pollute groundwater because the Earth is like a sponge that soaks everything in. A couple of litres of paint, motor oil, or gasoline can seep into the Earth and pollute hundreds of thousands of litres of groundwater. Pesticides and fertilizers can seep into the ground and affect groundwater. Toxic chemicals from dump sites and even the salt used on slippery winter roads can affect groundwater supplies.”⁸
- ◆ The text *Focus on Science* knows exactly where to lay the blame: “Unfortunately, man has abused his once-abundant supply of clean water. He has dumped fertilizers, road salt, untreated municipal sewage, and industrial wastes into the lakes and rivers, sometimes by accident, but often out of convenience.”⁹
- ◆ “Although Canada has an abundance of fresh water, the quality of this water has been threatened by human activities . . . Toxic (poisonous) chemicals are found throughout Canada’s river basins,” writes the text *Canada: Exploring New Directions*.¹⁰ “Nowhere are they more prevalent than in the Great Lakes basin, where over 800 different chemical compounds have been discovered in the water! Many of these have found their way into water as a result of years of neglect and ignorance. Only recently have these invisible and odourless poisons been detected. As monitoring equipment improves, more and more are found each year.”

Third “Crisis”: Oil Spills

- ◆ “Oil spills are also a serious threat to the environment, particularly the oceans” writes *Earth Science*. “Ocean currents can move an oil spill some distance away from the point of the spill. Oil spills can be washed ashore, fouling beaches and marshes.”¹¹
- ◆ “Up to 6 million tonnes of oil are dumped into the world’s oceans every year. Oil seeps out of boats that use it as fuel or carry it from port to port, and it flows into the sea from factories on the shore.” The children’s book *Earthcycles and Ecosystems* continues: “A large oil slick can cover many square kilometres (miles) of ocean, and it can last for up to ten years.”¹²

An Empty Faucet?

For most Canadians, water is cheap and abundant. In fact Canadians have the cheapest water rates of any industrialized country in the world.¹³ But occasionally after a series of dry years, some towns and cities impose regulations limiting the use of water—banning car washing and limiting the hours for watering lawns.

Such restrictions reinforce the impression that we are running out of water. In fact, they usually stem from governmental decisions that set the price of water too low.

The amount of water in the Earth’s ecosystem is always the same; it is constantly being recycled through evaporation and precipitation. The Earth “has more than enough water to meet human demands,” says Terry L. Anderson of Montana State University. The problem, he explains, is that “water is often found in the wrong place at the wrong time.”¹⁴

Frequently, water is in the “wrong place” because it is cheaper than it should be, and this causes people to overuse it. Our children’s

texts urge water conservation but they don't explain that low prices discourage conservation. Realistic pricing would change this situation. When water does become more expensive, people usually respond by using less of it. Industries can produce the same products with vastly different amounts of water.

- ◆ Some electric utilities use 170 gallons (765 litres) to produce one kilowatt-hour of electricity.

- ◆ But it's possible to produce the same amount of electricity with less than two gallons (nine litres)!¹⁵

Similarly, farming can use a great deal of water or just a little. Higher prices would encourage farmers to conserve and perhaps to change the crops they grow. They could decrease their production of alfalfa and increase production of safflower or canola, for example.¹⁶ Wiser policies could make more water available for everyone, rather than having water restrictions year after year.

A Government Failure?

The government provides water and sewage treatment throughout most of Canada. While this gives Canadians with the cheapest water in the industrialized world, it does not provide the best sewage treatment. The state of Washington frequently complains about Victoria's habit of flushing poorly treated wastes directly into the ocean. Many other Canadian cities share the practice.

Indeed, throughout the world, governments are often reluctant to invest the capital required to improve sewage-treatment plants. In the 1980s, it was estimated that bringing the British sewage system up to European code would cost \$54 billion. This would have hiked

taxes, and almost guaranteed an election loss to whoever put such a policy in motion. So Britain chose to privatize water supply and sewage in 1989. This move led to higher water rates for some, but it has also led to the clean-up of many beaches and waterways.

The idea of privatizing water and sewage was discussed in Quebec as early as 1993, and Ontario is slowly experimenting with the policy. Private water bills would indeed rise, but taxes would likely go down (or the deficit would be reduced), and the environment would become cleaner. It could be a welcome trade-off.¹⁷

Ticking Time Bombs?

Landfills containing chemicals are pictured as ticking time bombs that will eventually pollute groundwater and surface water by seeping out.

- ◆ “There are over 1000 man-made chemicals which find their way into our rivers and lakes. They are pumped from factories and leak from dumps,” says the text *Canada: A Growing Concern*. “The entire neighbourhood of Love Falls, New York was abandoned when it was discovered that chemicals were leaking from a nearby dump and were causing cancer and birth defects.” (In fact, while chemical wastes can poison water supplies, long-term hazards from the most famous waste sites, including Love Canal in New York State, have not been scientifically confirmed by epidemiological studies.)
- ◆ “In many parts of the United States, wells have been shut down and people are using bottled water,” says the Merrill text *Biology: Living Systems*.¹⁸ (The text does not report where in the United States this is occurring or whether it is for a very short time or a long period.)

Chemical wastes *can* pollute our water. But our children need to be taught that pollution problems are more complex than simply “bad guys” dumping chemicals.

Some texts attempt to spread the blame. “We all contribute to polluting Earth’s waters,” says one, citing the pollution caused by flushing toilets, washing hands, brushing teeth, and watering lawns.¹⁹ The downside of this approach is that it instills guilt in children for everyday activities.

A better way to look at water pollution is to recognize why it occurs. Streams, rivers, and groundwater are essentially a common pool. Just as people tend to litter in public spaces, people allow waste to enter a commonly owned waterway.

If water weren’t entirely a common pool, the picture would be different. In England and Scotland, it is possible to own rights to fish in streams and rivers. If fish are killed by pollution, fishermen can sue the polluter in court. In fact, the Anglers Conservation Association in England has obtained damages or injunctions for its members in hundreds of cases.²⁰ Ranchers in western Canada who have private trout streams flowing entirely within their property are careful to prevent pollution. However, private protection of other streams is rare, since fishing rights are not owned in Canada.

Over the years, it appears that there has been improvement in the cleanliness of our waterways. In 1990, an expert from Resources for the Future reviewed most of the available studies of water quality. He concluded that there had been “some improvement,” although it “has not been dramatic.” However, he noted “local success stories of substantial cleanup.”²¹ (Another review noted significant reductions in chemicals such as DDT and PCBs in the Great Lakes since 1970.²²)

It is hard to know how much has been accomplished since there was little information about water quality conditions when the act was passed, and thus no basis upon which to judge later progress.²³ Either way, textbooks are quick to demand more laws. One says:

“In the past governments have been slow to spend the large amounts of money needed to clean up the polluted waters. They have also been reluctant to pass and enforce tough anti-pollution laws to stop polluters.”²⁴

Nearly everyone agrees that most “point sources”—identifiable places where pollution enters a stream or river—have been controlled. But water that runs off fields, homes, buildings, parks, and farms, picking up natural and synthetic substances, still pollutes streams and rivers. This “non-point” source pollution is much harder to control.

Slicks and Spills

Oil spills can cause immediate—and very serious—harm to the environment, especially to fish, birds, and animals like otters that live near the ocean. But our children’s books don’t tell the full story of these spills.

Texts like *Earth Science* imply that the beaches may never be clean again.²⁵ This is not, in fact accurate. Canada’s largest oil spill occurred in 1970 when the Liberian tanker *Arrow* struck a rock in Chedabucto Bay, Nova Scotia. After a \$3.9 million dollar operation to clean up the 16,000 tonnes of bunker oil, the local ecology was found to be in good shape. The lobstering season opened on schedule, and the herring catch was up.²⁶

A 1990 U.S. government study of six highly publicized oil spills around the world also concluded that water and beaches recover fairly quickly after even big spills.²⁷ The Congressional Research Service (an arm of Congress) found, for example, the following:

- ◆ When the *Argo Merchant*, an oil tanker, was grounded off the shore of Massachusetts in 1976, the EPA administrator at the time called it “the biggest oil spill disaster on the American coast

in our history.”²⁸ In fact, however, pollution damage was small. The Congressional Research Service (CRS) reported a “general scientific consensus that classifying the incident as an ecological catastrophe had no factual basis.”²⁹

- ◆ In 1979 an oil well in the Bay of Campeche, Mexico, exploded. Oil and gas spewed from the pipe and the platform burned up. This turned out to be the largest oil spill in the history of offshore drilling or tanker transportation. Yet by the end of 1980, said the CRS, the only oil left was “scattered patches of tar mats along the Texas barrier island beaches,”³⁰ and some of these may have been natural oil seeps.

- ◆ In sum, the environmental impact of the spills studied was “relatively modest and . . . of relatively short duration,”³¹ said the CRS. It also found that “short-term impacts on marine animal life are dramatic but recovery of species populations in almost every case studied has been swift.”³²

In addition to perpetuating exaggerated fears, the books are misguided about policy. After discussing the *Exxon Valdez* spill in Prince William Sound, Alaska, in 1989, the kids’ book *Earthcycles and Ecosystems* asks: “How else can you use less oil? A great deal of oil in North America is used by industry, to power factories, to heat buildings and to make products such as plastics. You can’t do much on your own to reduce oil used in these ways. But you can make your concerns known to government.”³³

The implication of this line of argument is that laws against offshore drilling will avoid oil spills. In fact, they will do the opposite—they will encourage them. The *Exxon Valdez* was carrying oil that had been drilled in Alaska. Bans on off-shore drilling encourage more *on-shore* drilling. That means more shipping of oil in ocean vessels to reach refineries.

Talking to Your Children

Experts think that water quality is improving in Canada and the United States. It is, however, difficult to be sure. Although raw data on Canadian water quality exist in a federal database, the information is not in a format that can be used to evaluate water quality on a national level.

We do know of specific examples of major improvements in water quality. Sometimes, as related at the beginning of this chapter, people have joined together to clean up a body of water so that people can swim and fish in. As for water availability, we know that there is enough water for everyone.

Now you can answer your children's questions.

◆ Are we running out of water?

No. The amount of water on the Earth stays the same, and Canada consumes only about 1.5 percent of its available fresh water.³⁴ However, some places do not have enough water for people to live comfortably during droughts. This is usually because governments provide water at less than its cost, leading people use large amounts of water, often wastefully. In the western United States, for example, higher water prices might cause farmers to shift from alfalfa, rice, or cotton, to crops that use less water. Then, more water would be available for other uses.

◆ Is our water getting more polluted?

Probably not. It appears that many lakes and streams have better water quality than they used to. Laws require industry and sewage plants to clean their water before sending it to streams or rivers. But the laws do not really address the water that flows over streets and fields, picking up pollutants. Primarily because of this pollution, some bodies of water remain seriously polluted.

Activities for Parents and Children

The following activities will help your children think realistically about water supplies and water pollution.

Reading a Utility Bill

Ask your children to look at the two sample utility bills below, which charge residents for water, sewage, and trash pick-up.

Utility Bill #1			Utility Bill #2		
Reading Date	1/22/99	Reading	3/31/99	4/30/99	
		465462			
Water Rate/ 625 Gal.	Sewer Rate/ 625 Gal.	Consumption	Trash Rate/ Can	Number of Cans	Trash Charge
\$0.011	\$0.008	1912	\$1.50	6	\$9.00
Charges			Charges		
	Water	\$21.38		Water	\$15.00
	Sewer	\$15.30		Sewer	\$10.00
	Trash	\$15.00		Trash	\$9.00
Date Due	Amount Due	\$51.68	Date Due	Amount Due	\$34.00
3/15/99			5/30/99		

Ask them to compute the price per gallon of water from the information on these two water bills. They will quickly notice that Bill #2 lumps water together with other services and doesn't charge on the basis of the amount of water you use. (That bill does charge for trash volume, however, as we will discuss in chapter 19.)

Discuss with your children how these two billing procedures can influence how a person or family will use water. Which is more likely to encourage conservation? (*The first bill, because you can reduce*

your water bill by using less.) Which leads to more usage? (The second, because usage doesn't affect the amount you are charged.)

Now compare your own water bill to the two above. Would the family save money if everyone in your family conserved on water?

On a Shopping Trip

Ask the manager of a plumbing supply store to show your children the many products that homeowners can purchase to purify their tap water. The manager could also show the children water softening equipment and explain what it is used for. At home, discuss these products that help people get cleaner or better water.

At the grocery store, show them the kinds of bottled water for sale. Have them note a typical price per gallon. Back home, ask your children to compare the price of bottled water to the price of tap water, using your water bill (if it supplies these figures). They will probably find that the price is much higher at the store.

Ask your children why people are willing to pay more for bottled water. For one thing, the higher price is for drinking water or specialized water such as distilled water, while the water from the faucet has many uses. In addition, some people want a certain kind of taste in their water and they are willing to pay for it.

The point of these discussions is to show that people can take action on their own to ensure that their drinking water is to their liking.

Rivers and Streams

When you are in the country, stop at a river or stream. Point out that in most places in the country, no one "owns" the water in the stream, unless it is a small stream on private property. Fishermen can fish in the stream but they do not "own" the right to fish in clean water. If someone pollutes the stream, users of the water have little recourse.

In contrast, if someone dumped trash in your backyard, you could sue that person for polluting your property (so people rarely do

such a thing). Similarly, if people owned a stream, they could sue polluters to protect their property.

This process works in England, where the right to fish is something that a person can own. Do you know of any private fishing lakes or ponds? A visit to them might help explain why public streams and lakes are often dirty.

Notes

- 1 Canadian Wildlife Federation Bulletin, 4.
- 2 Judy Braus, ed., "Pollution: Problems & Solutions," *Ranger Rick's NatureScope* (Washington, DC: National Wildlife Federation, 1990), 65. The Adopt-a-Stream Foundation at the Northwest Stream Center is located at 600, 128th St. S.E., Everett WA 98208 USA (206-316-8592).
- 3 See Snyder *et al.*, 546, for example.
- 4 William A. Andrews and Sandra J. McEwan, *Investigating Aquatic Ecosystems* (Scarborough, ON: Prentice-Hall, 1987), 3.
- 5 Stewart Dunlop, *Towards Tomorrow: Canada in a Changing World-Geography* (Toronto: Harcourt Brace Jovanovich Canada, 1987), 150.
- 6 Boris DeWiel, Steve Hayward, Laura Jones, and M. Danielle Smith, *Environmental Indicators for Canada and the United States*. Critical Issues Bulletin (Vancouver: The Fraser Institute, March 1997), 40.
- 7 Andrews and McEwan, 3.
- 8 Susan Bosak, *Science Is . . .* (Co-published by Richmond Hill, ON/Markham, ON: Scholastic Canada/The Communication Project, 2nd ed., 1991), 374.
- 9 Frank Flanagan, *Focus on Science: Exploring the Physical World* (Toronto: D.C. Heath, 1979), 269.

- 10 Leonard A. Swatridge and Ian A. Wright, *Canada: Exploring New Directions* (Markham, ON: Fitzhenry & Whiteside, 1990), 242.
- 11 Samuel N. Namowitz and Nancy E. Spaulding, *Earth Science* (Toronto: Holt, Reinhart and Winston, Canadian ed., 1991), 495.
- 12 Savan, 64.
- 13 Elizabeth Brubaker, "Bring Back Our Beaches," *The Next City*, Vol 2, #4, 46.
- 14 Terry L. Anderson, "Water Options for the Blue Planet," in *The True State of the Planet*, ed. by Ronald Bailey (New York: The Free Press, 1995), 267–294 at 275.
- 15 James D. Gwartney and Richard L. Stroup, *Introduction to Economics: The Wealth and Poverty of Nations* (Fort Worth: The Dryden Press, 1994), 543.
- 16 Anderson, 284.
- 17 Brubaker, 32–46.
- 18 Raymond F. Oram, *Biology: Living Systems*, Annotated Teacher's Edition (Columbus, OH: Merrill, 1989), 753.
- 19 Ralph M. Feather, *Earth Science* (Lake Forest, IL: Merrill/Glen-coe, 1993), 535.
- 20 Terry L. Anderson and Donald R. Leal, *Free Market Environmentalism* (San Francisco, CA: Pacific Research Institute, 1991), 148.
- 21 A. Myrick Freeman III, "Air Pollution Policy," in *Public Policies for Environmental Protection* ed. by Paul R. Portney (Washington, DC: Resources for the Future, 1990), 97–149, at 120.
- 22 E. Calvin Beisner and Julian L. Simon, "Editors' Appendix," in *The State of Humanity*, ed. by Julian L. Simon (Cambridge, MA: Blackwell Publishers, 1995) 469–475.
- 23 Roger E. Meiners and Bruce Yandle, "Clean Water Legislation: Reauthorize or Repeal?" *Taking the Environment Seriously*, ed. by Meiners and Yandle (Lanham, MD: Rowman & Littlefield, 1993), 73–101, at 76.
- 24 *Canada: A Growing Concern*, 230.

- 25 Snyder *et al.*, 586.
- 26 Shell Canada Ltd. “Canada’s largest oil spill: A case study” in Margaret Fagan, *Challenge for Change* (Toronto: McGraw-Hill Ryerson, 1991), 200.
- 27 James E. Mielke, “Oil in the Ocean: The Short- and Long-Term Impacts of a Spill,” *Congressional Research Service Report for Congress*, July 24, 1990 (90-356 SPR).
- 28 Mielke, 18.
- 29 Mielke, 19.
- 30 Mielke, 22–24.
- 31 Mielke, Summary.
- 32 Mielke, Summary.
- 33 Savan, 65.
- 34 DeWiel *et al.*, 40.