

Provincial Health Officer's Annual Report 2000

**Drinking Water Quality in
British Columbia:
The Public Health Perspective**

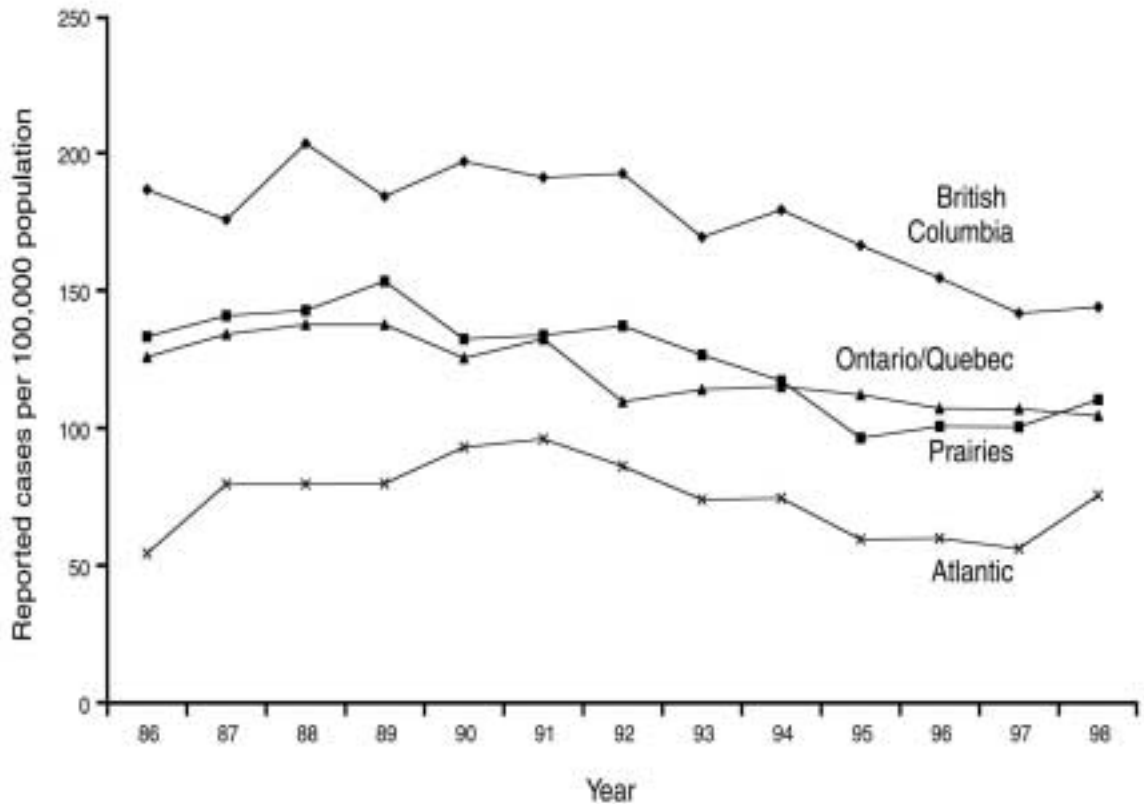
Health Goals for British Columbia

Health Status				
Well-Being	General Health	Health Conditions	Deaths	
Goal 1: Living and Working Conditions				
Employment	Income	Participation and Social Integration	Housing and Community Design	
Goal 2: Individual Capacities, Skills, and Choices				
Healthy Child Development	Learning Opportunities	Healthy Choices	Independent Living	
Goal 3: Physical Environment				
Air	Water	Food	Land and Soil	Sustainability
Goal 4: Health Services				
Accessibility	Doing the Right Things Right		Improving Health	
Goal 5: Aboriginal Health				
Health Status		Factors Affecting Health		
Goal 6: Disease and Injury Prevention				
Non-Communicable Disease	Communicable Disease		Injuries	

Drinking Water Quality and the B.C. Health Goals

Health Status				
Well-Being	General Health	Health Conditions	Deaths	
Goal 1: Living and Working Conditions				
Employment	Income	Participation and Social Integration	Housing and Community Design	
Goal 2: Individual Capacities, Skills, and Choices				
Healthy Child Development	Learning Opportunities	Healthy Choices	Independent Living	
Goal 3: Physical Environment				
Air	Water	Food	Land and Soil	Sustainability
	Objective 3.2: Improve and maintain the quality and safety of water throughout British Columbia.			
Goal 4: Health Services				
Accessibility	Doing the Right Things Right		Improving Health	
Goal 5: Aboriginal Health				
Health Status		Factors Affecting Health		
Goal 6: Disease and Injury Prevention				
Non-Communicable Disease	Communicable Disease		Injuries	
	Objective 6.12: Reduce waterborne and foodborne diseases.			

Figure 2: Enteric (Intestinal) Disease Rates, 1986 - 1998



Diseases: Total reported cases of amoebiasis, campylobacteriosis, giardiasis, hepatitis A, listeriosis (all types), paratyphoid, salmonellosis, shigellosis, typhoid, and verotoxigenic E. coli. Reported cases from Health Canada, Disease Surveillance On-Line, <http://www.hc-sc.gc.ca/hpb/lcdc/webmap/index.html>. Population estimates from Statistics Canada, Demography Division; data obtained from the Health Data Warehouse, B.C. Ministry of Health Services.

**A Report on the Health
of British Columbians**

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**BRITISH
COLUMBIA**

Ministry of Health Planning
Office of the
Provincial Health Officer

October 2001



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Water Systems



Inventory of B.C.'s Water Systems



Risks to Health from Drinking Water

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From Source to Tap – Reducing Health Risks



Recommendations

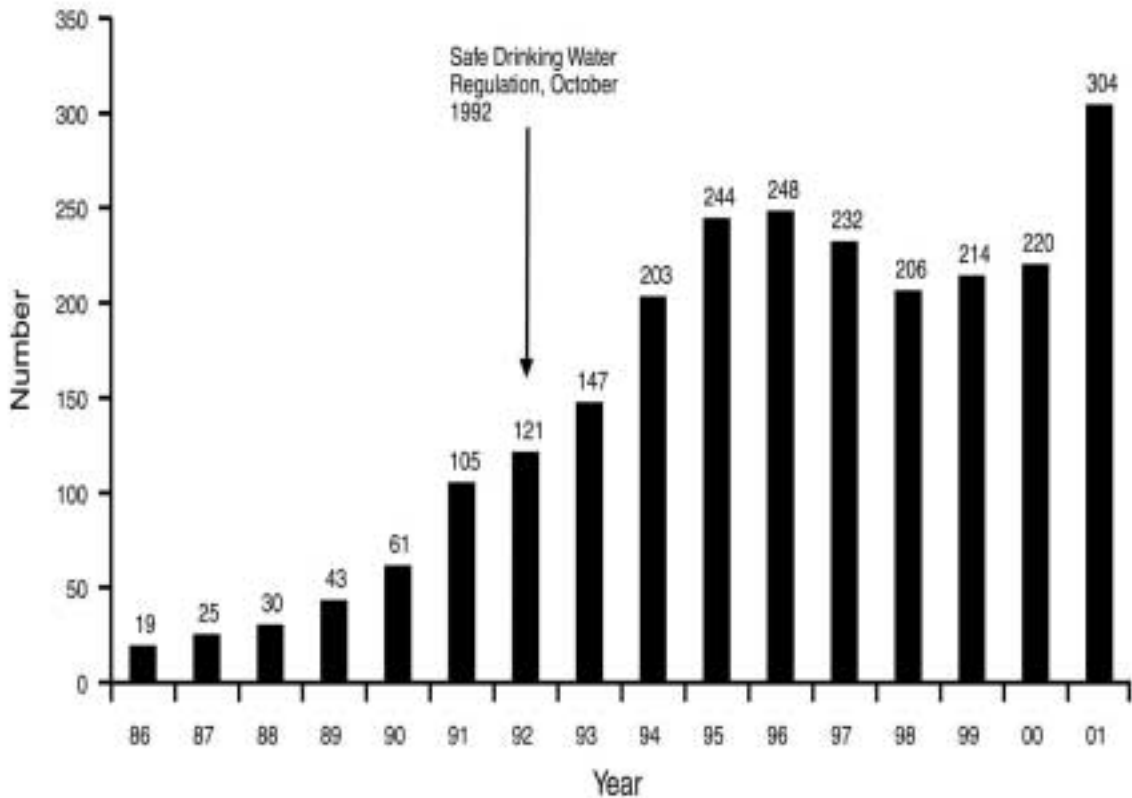


Information Boxes

Facts and Figures

- 3,016 water systems under provincial jurisdiction.
- 468 First Nations water systems.
- Half the population gets their water from the two largest systems: Greater Vancouver and Capital districts.
- Two-thirds of provincial systems are “small” systems.
- Three-quarters of systems use surface water.
- 304 boil-water advisories in August 2001.
- 29 waterborne outbreaks in B.C. in past 20 years, caused by parasites, bacteria, and viruses.
- Arsenic, nitrates, and turbidity affect water in certain areas of the province.

Figure 3: Boil-Water Advisories, B.C., 1986 - 2001



This chart shows the number of advisories in place at one point in time each year. In August 2001, there were 304 advisories, affecting about 10 per cent of the 3,016 water systems and one per cent of the provincial population. The increase in boil-water advisories in recent years is due in part to the Safe Drinking Water Regulation and increased emphasis on testing and reporting, which leads to identification of more unsafe water supplies. Source: Public Health Protection, B.C. Ministry of Health Services.

Information Gaps

- How many water systems are there in B.C. today?
- How many systems are “orphans”?
- What types of water treatment are in use?
- How many log reductions does the treatment provide against viruses, *Giardia*, *Cryptosporidium*?
- How many systems comply with the B.C. Safe Drinking Water Regulation?
- How many systems have staff who have undergone operator training and certification?
- Other than during outbreaks, what is the level of water-related illness in B.C.?

Eight Key Messages

1. All surface water is susceptible to contamination.
2. A multi-barrier approach is the best assurance of safe drinking water.
3. Water System management requires risk assessment, risk management, and a culture of continuous quality improvement.
4. Protecting water sources is important, but there are limits to what such measures can achieve. Pathogens such as *Giardia* and *Cryptosporidium* (because of the sources in wildlife) will always be present in B.C. watersheds.

Eight Key Messages

(continued)

5. All surface water requires disinfection.
6. Maintaining safe drinking water requires investing in filtration and other advanced forms of water treatment.
7. British Columbia needs a database that reports on water system characteristics, water system performance, and the occurrence of water-related illnesses.
8. If we want to improve drinking water quality in B.C., we will have to find ways to pay for it.

Blueprint for Action on Drinking Water Quality

1	Commitment to drinking water quality	<p>32 Recommended Actions</p> <ol style="list-style-type: none"> 1. Legislated authority* 2. Size of regulated programs* 3. New and orphaned water systems 4. Groundwater 5. Cross-connection control 6. Inter-ministry coordination* 7. Drinking water specialists 8. First Nations water systems 9. Standards and guidelines 10. Microbiological treatment standards* 11. Fluoridation 12. Additional resourcing 13. Access to capital funds
2	Risk assessment and information gathering	<ol style="list-style-type: none"> 14. Multiple barriers and critical control points 15. Hazard identification and risk assessment 16. Surveillance for waterborne disease 17. Standardized data-set and provincial database for drinking water quality
3	Planning for risk management	<ol style="list-style-type: none"> 18. Risk management plans 19. Triggering of boil-water advisories 20. Regional action plans
4	Quality assurance and good management practice	<ol style="list-style-type: none"> 21. Laboratory accreditation 22. Testing of raw water sources 23. Terms and conditions of operating permits 24. Operator training and certification 25. Practice guidelines – local health officials
5	Public involvement and education	<ol style="list-style-type: none"> 26. Community involvement 27. Public education
6	Accountability	<ol style="list-style-type: none"> 28. Performance measures* 29. Public reporting*
7	Research and evaluation	<ol style="list-style-type: none"> 30. Watershed and groundwater research 31. Walkerton Inquiry report 32. Long-term review of results

* Priority recommendations

Priority Recommendations

- Provide legislative authority that establishes the safety of drinking water as the priority consideration where there are competing water uses (recommendation 1).
- Consider establishing various levels of regulation, depending on the size of the water system and the population served (recommendation 2).
- Make a commitment to coordination in the regulation and management of water systems (recommendation 6).
- Require microbiological treatment standards (recommendation 10).
- Establish a set of performance measures for drinking water systems, along with methods for public reporting of results (recommendations 28 and 29).

Figure 1: A Typical Water System Showing Sources, Treatment and Distribution Systems

