TRAGEDY ON TAP:
WHY ONTARIO NEEDS A
SAFE DRINKING WATER ACT

VOLUME II

Submissions of the
Concerned Walkerton Citizens
and
Canadian Environmental Law Association
to Part II of the Walkerton Inquiry

Date: May 15, 2001

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This report is dedicated to the people of Walkerton. May their struggle bring clean water to all future Ontarians …

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FOREWORD

A year ago, as spring arrived in the picturesque farming community of Walkerton, Ontario, it ushered in an intruder, E. coli 0157:H7, that invaded the community water delivery system, causing the death of seven people and sickening thousands of others. Shortly after this, the Concerned Walkerton Citizens invited the Canadian Environmental Law Association to represent them in the public inquiry convened to examine the tragedy and the safety of Ontario's drinking water systems. Both groups have prepared this Issue Paper for the Part II Study Phase of the Inquiry. It has drawn on the experience of the people of Walkerton, the Inquiry evidence to date, the history of Ontario water protection and our examinations of the best models drawn from water protection regimes around the world. It is our collective hope that the legacy of Walkerton will be a *Safe Drinking Water Act* built on the recommendations offered in this study. Walkerton has made waves world-wide and caused many jurisdictions to examine and change drinking water protections and practices. This paper is accurate up to May 15, 2001, the date of its submission to the Honourable Justice Dennis R. O'Connor, Commissioner of the Walkerton Inquiry.

TRAGEDY ON TAP: THE NEED FOR AN ONTARIO *SAFE DRINKING WATER ACT*

Volume II

Walkerton Inquiry Part II Issue Paper

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EXECUTIVE SUMMARY

Overview of Current Legal Regime in Ontario

The current legal regime for protecting Ontario's drinking water (and its sources) is a diverse mix of general legislation, regulations, standards, policies, objectives and guidelines.

Under Canada's *Constitution Act*, the issues of environmental protection, public health and drinking water have not been exclusively assigned to either the federal or provincial levels of government. Accordingly, both levels of government have concurrent jurisdiction over certain aspects of the environment, public health and drinking water.

To date, the federal government has played a minimal role in regulating drinking water quality. Federal officials participate on the Federal-Provincial Subcommittee on Drinking Water, which publishes and updates non-binding drinking water guidelines. In 1986, the federal government introduced the *Drinking Water Materials Safety Act* to regulate water treatment devices, chemical additives and water system components, but this legislation was not enacted. Accordingly, the federal framework largely consists of environmental laws of general application, such as the *Canada Water Act*, *Canadian Environmental Assessment Act*, *Canadian Environmental Protection Act, 1999*, and *Fisheries Act*.

In contrast, the Ontario government has been more extensively involved in water resource management and drinking water protection. The centrepiece of Ontario's drinking water regime is the *Ontario Water Resources Act* (administered by the Ministry of the Environment) and certain regulations thereunder, such as the Drinking Water Protection Regulation (O.Reg.459/00) and the Water and Sewage Works Regulation (O.Reg. 435/93). In addition, the Ministry has developed numerous policies, guidelines and objectives regarding surface water, groundwater, and drinking water. General environmental laws – such as the *Environmental Protection Act*, *Environmental Assessment Act*, and *Environmental Bill of Rights* – also form part of the legal framework for protecting drinking water in Ontario.

Ontario has also enacted various laws that create and empower local agencies and municipal officials in relation to water quality and public health. These laws include the *Conservation Authorities Act*, *Health Promotion and Protection Act*, *Municipal Act*, *Planning Act*, and *Public Utilities Act*.

At the present time, there is no specialized safe drinking water legislation at either the provincial or federal level. From 1982 to 2000, seven private member's bills were introduced in the Ontario Legislature to establish a *Safe Drinking Water Act*. To date, none of these bills have been enacted.

Safe Drinking Water Legislation in Other Jurisdictions

A number of Canadian, American, European and Australian jurisdictions have passed or proposed laws and regulations that, in many respects, offer greater protection of drinking water (and its sources) than is available under Ontario's current legal regime.

For example, British Columbia has promulgated Safe Drinking Water Regulations under its *Health Act*. More recently, B.C.passed the *Drinking Water Protection Act* (Bill 20), which, among things, creates and empowers provincial "drinking water coordinators" and "drinking water officers"; requires water system assessments and response plans; requires drinking water protection plans for prescribed areas; imposes statutory treatment, monitoring and notification duties; and creates new prohibitions and penalties in relation to drinking water contraventions.

Similarly, Quebec has passed a Drinking Water Regulation under its *Environmental Quality Act*. More recently, Quebec proposed a new regulation that would tighten up existing drinking water standards, and would require more extensive drinking water testing (including private wells).

In New Brunswick, a Potable Water Regulation was passed under the *Clean Water Act*, but regulations have also been passed to protect watersheds and wellfields. These regulations protect these drinking water sources through setback requirements, buffer zones and land use restrictions.

In the United States, the federal *Safe Drinking Water Act* serves as the cornerstone of American drinking water protection efforts. First enacted in 1974, this Act (as amended in 1986 and 1996) is notable for its stringent national standards; public participation in standard-setting; community "right to know"; funding and research programs; and emphasis on source water assessment and source protection, such as wellhead protection programs.

The U.S. Act has been supplemented at the state level in jurisdictions such as New Jersey, which enacted its own *Safe Drinking Water Act* in 1977, and has used its legislation to create a Bureau of Safe Drinking Water. The New Jersey regime also imposes drinking water requirements that, in some instances, are more stringent than federal standards. More recently, New Jersey has proposed testing and disclosure requirements in relation to private wells.

In Europe, the European Union (EU) has issued directives to member states on various drinking water matters, such as parameter limits, monitoring and reporting. More recently, a Water Framework Directive has been released to place greater emphasis on watershed management and groundwater protection.

In light of these EU directives, England has passed drinking water quality regulations, and has enacted a number of laws regarding water resources and water suppliers. Significantly, England established a specialized Drinking Water Inspectorate for investigation, enforcement, monitoring, reporting and research purposes. In addition, England's Environment Agency has authority to delineate "water protection zones" for surface watercourses that serve as sources of drinking water.

In Australia, the New South Wales government has passed drinking water legislation and licencing requirements that, among other things, authorize the development of watershed management, create statutory consumer rights, and require extensive monitoring and reporting (including posting "right to know" information on the Internet)

The Need for Legislative Reform in Ontario

Having regard for these developments in other jurisdictions, it is clear that there is considerable room for improvement in Ontario's current legal regime for protecting drinking water and its sources.

In summary, the following conclusions can be reached about Ontario's current legal regime:

- regulatory responsibility for drinking water safety remains highly fragmented and uncoordinated between various provincial ministries and local or municipal officials;

- Ontario's drinking water requirements are primarily set out in subordinate regulation, which lacks the legal weight, significance and longevity of legislation;

- there are few mechanisms to hold the province politically or judicially accountable in relation to drinking water protection;

- there are minimal opportunities for public participation in the standard-setting and approval processes regarding drinking water;

- source water assessment and source water protection programs are not mandated by statute;

- investigation and enforcement remains discretionary and uncertain;

- community "right to know" provisions are limited in scope and content;

- financial/technical assistance programs for drinking water are discretionary and incomplete; and

- no multi-stakeholder drinking water advisory committee exists in Ontario.

Accordingly, it is strongly recommended that Ontario should enact a *Safe Drinking Water Act* as soon as possible. Among other things, the following principles and provisions should be incorporated into Ontario's *Safe Drinking Water Act*:

- creation of a substantive public right to clean and safe drinking water;

- inclusion of a paramountcy clause that confirms the priority of drinking water safety in cases of conflict with other provincial laws;

- application to all public and private owner/operators of water treatment and distribution systems in Ontario;

- establishment of a specialized "Drinking Water Commission" (reporting to the Minister of the Environment) to develop and oversee the province's drinking water program (including standard-setting, approvals, investigation, enforcement, and provincial level

monitoring/reporting);

- clear definition of lines of authority, responsibility and communication between the Commission and other statutory officials involved in drinking water protection;

- mandatory duty to set, review and revise provincial standards (with full public input) that implement the "multi-barrier" approach to drinking water safety, and that are aimed at protecting the health and safety of all Ontarians (including persons who may be particularly vulnerable to waterborne disease);

- inclusion of the "precautionary principle" in cases of scientific uncertainty regarding drinking water contaminants;

- mandatory duty to identify and evaluate new or emerging threats to drinking water safety;

- mandatory duty upon drinking water suppliers to undertake comprehensive source water assessments, and to develop and implement source water protection plans (eg. through acquisition, expropriation, and land use prohibitions or restrictions);

- entrenchment of drinking water treatment, testing, monitoring, notification, laboratory accreditation, and operator training requirements on a statutory basis (including a specific definition of, and treatment requirement for, "groundwater under the influence of surface water");

- creation of broad prohibitions, strong penalties, and administrative order powers;

- inclusion of public enforcement tools, such as judicial review, citizens' suit provisions, and civil cause of action for harm caused by contraventions of the Act;

- creation of a centralized and publicly accessible database of drinking water information and records;

- expansion of community "right to know" provisions;

- mandatory duty to establish financial/technical assistance programs, particularly for small waterworks; and

- creation of a multi-stakeholder drinking water advisory committee.

Unless and until these legislative reforms are enacted in Ontario, drinking water and public health will continue to be at risk across the province.

May 2001

PART I – OVERVIEW OF CURRENT LEGAL REGIME IN ONTARIO

1.1 Introduction

The current legal regime for protecting Ontario's drinking water (and its sources) is best described as a diverse mix of general legislation, regulation, standards, objectives and guidelines of varying vintage. At the present time, there is no specialized safe drinking water legislation in Ontario, nor does such legislation exist at the federal level.

The centrepiece of Ontario's drinking water regime is the *Ontario Water Resources Act*[1] and regulations thereunder, such as the Water and Sewage Works Regulation (O.Reg. 435/93) and the new Drinking Water Protection Regulation (O.Reg. 459/00). Other provincial statutes – such as the *Environmental Assessment Act*,[2] *Environmental Bill of Rights*,[3] *Environmental Protection Act*,[4] and *Health Promotion and Protection Act*[5] – also assist in protecting water quality and public health, as described below. Similarly, a number of provincial policies, guidelines and objectives[6] have been developed to ensure the protection and and conservation of Ontario's water resources.

This provincial regime is supplemented by environmental laws and regulations which exist at the federal level, such as the *Canada Water Act*,[7] *Canadian Environmental Protection Act, 1999*,[8] and *Fisheries Act*.[9] These laws apply in Ontario and confer an additional degree of protection of surface watercourses which serve as sources of drinking water. Moreover, federal water policy[10] includes commitments to safe drinking water, and federal drinking water guidelines have been developed with the assistance of provincial and territorial officials.[11]

In general, the responsibility for protecting drinking water (and its sources) is shared between federal, provincial, and municipal levels of government. However, the primary responsibility for ensuring potable water supplies in Ontario rests with the provincial and municipal governments.

Accordingly, the purpose of this section of the paper is to:

- review the constitutional framework for drinking water protection;

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[1] *Ontario Water Resources Act*, R.S.O. 1990, c.O.40.
[2] *Environmental Assessment Act*, R.S.O. 1990, c.E.18.
[3] *Environmental Bill of Rights*, S.O. 1993, c.28.
[4] *Environmental Protection Act*, R.S.O. 1990, c.E.19.
[5] *Health Promotion and Protection Act*, R.S.O. 1990, c.H.7.
[6] Ministry of the Environment, *Water Management: Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment* (July 1994).
[7] *Canada Water Act*, R.S.C. 1985, c.C-11.
[8] *Canadian Environmental Protection Act, 1999*, S.C. 1999, c.33 (Royal Assent on September 14, 1999).
[9] *Fisheries Act*, R.S.C. 1985, c.F-14.
[10] Environment Canada, *Federal Water Policy* (1987), p.17.
[11] Federal-Provincial Subcommittee on Drinking Water, *Guidelines for Canadian Drinking Water Quality* (6th ed., September 1996).

- describe the current legal regime for drinking water protection at the federal, provincial and municipal levels; and

- summarize previous attempts to enact safe drinking water legislation in Ontario.

It should be noted that this Part of the paper focuses on statutes, laws and policies which have been passed or proposed by the federal and provincial levels of government in relation to the environment and public health. Accordingly, it is beyond the scope of this Part to discuss common law rights (e.g. trespass, nuisance, negligence, riparian rights, or strict liability) or remedies (e.g. damages or injunctions) which are available to persons whose drinking water quality or quantity has been impaired by activities which contravene tort or contract law principles.[12]

1.2 Constitutional Framework

Canada's *Constitution Act, 1867*[13] divides legislative powers between the federal and provincial levels of government. However, the *Constitution Act, 1867* does not specify which level of government has jurisdiction over "environment", "public health", or "drinking water".

Nevertheless, there are a number of provincial heads of power under the *Constitution Act, 1867* which give Ontario considerable jurisdiction to protect the environment and public health within the province. These provincial heads of power include:

- hospitals (section 92(7));

- municipal institutions (section 92(8));

- local works and undertakings (section 92(10));

- property and civil rights (section 92(13));

- matters of a "merely local or private nature" (section 92(16)); and

- natural resources, forestry and electrical energy (sections 92A and 109).

At the same time, there are a number of federal heads of power under the *Constitution Act, 1867* which give the Government of Canada jurisdiction over environmental quality and public health. These federal heads of power include:

- peace, order and good government (section 91));

[12] See, for example, Swanson et al., *The Price of Pollution: Environmental Litigation in Canada* (Environmental Law Centre, 1990); Bilson, *The Canadian Law of Nuisance* (Butterworths Canada Ltd., 1991); Faieta et al., *Environmental Harm: Civil Actions and Compensation* (Butterworths, 1996); Fleming, *The Law of Torts (9th ed.)* (LBC Information Services, 1998); and Lindgren, "The New 'Toxic Torts': An Environmental Perspective" (Canadian Institute, 2000).

[13] *Constitution Act, 1867*, (U.K.) 30 & 31 Vict., c.3 (formerly the *British North America Act*)

- trade and commerce (section 91(2));

- navigation and shipping (section 91(10));

- sea coast and inland fisheries (section 91(12));

- criminal law (section 91(27));

- federal works and undertakings (sections 91(29) and 92(10));

- canals, harbours, rivers and lake improvements (section 108).

In addition, the *Constitution Act, 1867* has assigned "agriculture" to both the federal and provincial levels of governments (section 95). This overlapping jurisdiction has permitted both levels of government to enact regulatory controls over pest control products, such as herbicides and insecticides.[14]

Given the above-noted division of legislative powers, it is clear that environmental quality and public health are largely matters of concurrent (or shared) jurisdiction between the federal and provincial levels of government.

Across Canada, however, responsibility for water resource management has generally been assumed by provincial authorities or agencies, rather than by the federal government. In Ontario, for example, the Ministry of the Environment ("MOE") has taken the lead role in water resource management,[15] and the MOE administers a number of statutes, regulations and policies intended to protect and conserve the province's water resources.[16]

Despite this well-established provincial regime, recent judicial pronouncements have confirmed that there is a strong constitutional basis for federal laws aimed at protecting water quality and/or public health.[17] The existence of such federal jurisdiction has led some commentators to suggest that the federal government should enact a *Safe Drinking Water Act*,[18] or, at very least,

[14] Cf. the federal *Pest Control Products Act*, R.S.C. 1985, c.P-9 and Ontario's *Pesticides Act*, R.S.O. 1990, c.P.11.
[15] Ontario's Minister of the Environment has supervisory jurisdiction over the province's groundwater and surface water: see section 29 of the *Ontario Water Resources Act*, R.S.O. 1990, c.O.40.
[16] Ontario's Ministry of Natural Resources ("MNR") also exercises jurisdiction over certain aspects of water resource management: see, for example, the *Conservation Authorities Act*, R.S.O. 1990, c.C.27; *Lakes and Rivers Improvement Act,* R.S.O. 1990, c.L.3; and *Public Lands Act*, R.S.O. 1990, c.P.43. In addition, the MNR regulates various resource extraction activities which may impact water quality or quantity: see, for example, the *Aggregates Resources Act*, R.S.O. 1990, c.A.8; and *Crown Forest Sustainability Act,* S.O. 1994, c.25.
[17] *Northwest Falling Contractors v. R.* [1980] 2 S.C.R. 292 (federal prohibition against water pollution upheld on basis of fisheries power); *R. v. Crown Zellarbach*, [1988] 1 S.C.R. 401 (federal regulation of ocean dumping upheld on basis of "peace, order and good government" residual power); *R. v. Hydro-Quebec*, [1997] 3 S.C.R. 213 (federal regulation of toxic substances upheld on basis of criminal law power).
[18] T. Vigod and A. Wordsworth, "Water Fit to Drink? The Need for a *Safe Drinking Water Act* in Canada" (1982), 11 C.E.L.R. 80.

promulgate binding national drinking water standards rather than guidelines.[19] Indeed, the federal government's current water policy contains a commitment to "consider legislation to ensure the safety of drinking water within federal jurisdiction and to complement provincial and territorial programs".[20]

Regardless of whether the federal government can or should statutorily protect drinking water quality, it is beyond dispute that Ontario has clear constitutional authority to enact and enforce safe drinking water legislation. Accordingly, the primary focus of this paper is whether – or to what extent – safe drinking water legislation may be required in Ontario to address shortcomings in the current legal framework for protecting drinking water.

To answer this central question, it is first necessary to review the current legal framework for protecting drinking water at the federal, provincial, and municipal levels, as set out below.

1.3 Analysis of Current Legal Regime

(a) Federal Regime

At the present time, there is no federal legislation which specifically protects or regulates drinking water, particularly at the point of consumption.

Nevertheless, the federal government has developed various water-related laws and policies which are relevant to drinking water quality and quantity across Canada, as described below. In addition, representatives from Environment Canada and Health Canada (as well as Ontario's MOE and other provincial and territorial representatives) serve on the joint Federal-Provincial Subcommittee on Drinking Water, which publishes and updates drinking water guidelines for numerous microbial, chemical, physical and radiological parameters.[21]

For substances known or suspected to be harmful to human health, these national guidelines establish a maximum acceptable concentration ("MAC") or interim maximum acceptable concentration ("IMAC"). In addition, the guidelines include aesthetic objectives for substances which may cause appearance, odour or taste problems in drinking water. Although these national guidelines are not legally binding, they have generally been adopted and/or refined by provincial authorities, either as drinking water objectives or standards (see Part II of this paper below).

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[19] See, for example, Sierra Legal Defence Fund, *Waterproof: Canada's Drinking Water Report Card* (January 2001), at page 35.

[20] Environment Canada, *Federal Water Policy* (1987), at p.17: < http://www.ec.gc.ca/water/index.htm>

[21] Federal-Provincial Subcommittee on Drinking Water, *Guidelines for Drinking Water Quality* (6th ed., September 1996). The Subcommittee has also released a Drinking Water Substances Priority List (October 2000), which identifies various parameters (e.g. viruses, pesticides, disinfection by-products, etc.) which are undergoing assessment or re-evaluation.

In an apparent attempt to move beyond these guidelines, Health Canada commenced public consultations in 1996 on a proposed *Drinking Water Materials Safety Act*.[22] The primary purpose of this Act was to certify and regulate drinking water materials, such as water treatment devices, chemical additives, or water system components (section 3). Among other things, the Act proposed to:

- authorize the Minister of Health to establish national drinking water guidelines on various matters (section 5), conduct research on improving drinking water quality (section 6), and enter into administrative agreements with provincial governments (section 20);

- establish an accreditation and certification process for evaluating drinking water materials (sections 7 to 9);

- prohibit deceptive practices (e.g. misleading advertising) regarding drinking water materials (sections 10 to 12);

- authorize the Minister of Health to require the submission of information on drinking water materials (sections 22 and 23), and to prohibit unsafe drinking water materials (sections 24 and 25); and

- enable the passage of regulations respecting water drinking materials (section 27).

However, this proposed federal legislation has not been enacted to date.[23] In the wake of the recent *Cryptosporidium* outbreak in North Battleford, Saskatchewan, it has been suggested that the federal government should enact nationally binding drinking water standards, or, alternatively, should regulate drinking water quality via amendments to the *Food and Drug Act*. At this time, it is unclear when – or whether – such proposals will be acted upon by federal officials.

It should be noted that Health Canada has undertaken other non-regulatory drinking water initiatives, such as conducting drinking water research, assessing water treatment processes and products,[24] and promoting public awareness of drinking water safety.[25] In addition, given the relatively high incidence of water-borne disease within First Nation communities, Health Canada, in conjunction with the Assembly of First Nations, established a Drinking Water Safety Program for Native People to assist in identifying and remedying drinking water quality

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[22] The 1996 version of the *Drinking Water Materials Safety Act* (Bill C-76) died on the order paper when the 1997 federal election was called. The Act was reintroduced as Bill C-14 in 1997, but it, too, died on the order paper in September 1999.

[23] Until such legislation is enacted, drinking water materials could theoretically be regulated by Health Canada as prohibited, restricted or controlled products pursuant to the *Hazardous Products Act*, R.S.C. 1985, c.H-3.

[24] For example, Health Canada has retained an accredited laboratory to test and report upon drinking water materials which fail health-based performance standards:
<http://www.hc-sc.gc.ca/ehp/ehd/bch/water_quality/materials.htm>.

[25] Health Canada, "Water Quality Activities" (September 2000):
<http://www.hc-sc.gc.ca/ehp/ehd/bch/water_quality.htm>.

problems.[26] Health Canada has also published recreational water quality guidelines for use by provincial health officials involved in monitoring water quality of public beaches and investigating illnesses resulting from the use of recreational waters.[27]

The principal water-related statutes administered by the federal government include:

- *Arctic Waters Pollution Prevention Act;*
- *Canada Shipping Act;*
- *Canada Water Act;*
- *Canadian Environmental Protection Act, 1999;*
- *Dominion Water Power Act;*
- *Fisheries Act;*
- *International Boundary Waters Treaty Act;*
- *International River Improvements Act;*
- *Lake of the Woods Control Board Act;*
- *Navigable Waters Protection Act;*
- *Northwest Territories Waters Act;* and
- *Yukon Waters Act.*

In addition, the federal government has enacted the *Canadian Environmental Assessment Act* ("CEAA"),[28] which requires the preparation of an environmental assessment for certain projects and physical activities caught by CEAA.[29] CEAA requirements may be triggered by municipal infrastructure projects (e.g. water treatment, distribution or storage facilities) which require the provision of federal lands, federal funding, or federal approvals or permits which are prescribed

[26] This program includes: increasing water testing and monitoring; establishing new laboratories; developing operator training programs; and providing technical and public health advice: see Health Canada, *Health and Environment: Partners for Life* (1997), at page 101.
[27] Health Canada, *Guidelines for Recreational Water Quality* (1992).
[28] *Canadian Environmental Assessment Act*, S.C. 1992, c.37: <http://www.ceaa.gc.ca>. Generally, see Northey, *The 1995 Annotated Canadian Environmental Assessment Act and EARP Guidelines Order* (Carswell, 1994); and Hazell, *Canada v. The Environment: Federal Environmental Assessment 1984-1998* (Canadian Environmental Defence Fund, 1999).
[29] "Project" is defined as "any proposed construction, operation, modification, decommissioning, abandonment or other undertaking" of a physical work, and includes certain physical activities (e.g. tree cutting, water taking, altering fish habitat, etc.) prescribed by regulation: see *Canadian Environmental Assessment Act*, S.C. 1992, c.37, section 2(1) and the Inclusion List Regulations (SOR/94-637).

on the CEAA Law List Regulation.[30] In addition, while CEAA does not address drinking water *per se*, the various types of environmental assessment under the Act (e.g. screening, comprehensive study, panel review and mediation) offer opportunities to identify, assess, and mitigate potential impacts of projects upon groundwater or surface watercourses which serve as sources of drinking water.[31]

Of the above-noted federal statutes, the laws which are the most directly relevant to drinking water (and its sources) include the *Canada Water Act, Canadian Environmental Protection Act, 1999,* and *Fisheries Act.* The essential elements of these statutes are summarized below.

Canada Water Act

Enacted in 1970 and presently administered by Environment Canada, the *Canada Water Act* ("CWA")[32] is not used to specifically regulate drinking water quality or quantity. However, the CWA contains a number of provisions which are related to water quality in general. These provisions include:

- authorizing various federal-provincial arrangements (e.g. joint subcommittees, programs or agreements) regarding water resource management (Part I);

- regulating discharges of waste into prescribed "water quality management areas", and establishing federal water quality management programs for inter-jurisdictional waters (Part II);

- establishing advisory committees to assist in the implementation of the Act (section 28); and

- requiring the Minister of the Environment to report annually to Parliament on operations under the Act (section 38).

Persons convicted of contravening the CWA face small fines (sections 30 and 31) and prohibition orders (section 32).

Canadian Environmental Protection Act, 1999

The new *Canadian Environmental Protection Act, 1999* ("CEPA") is the centrepiece of the federal government's pollution control regime.[33] CEPA is principally administered by Environment Canada, although Health Canada has certain responsibilities in relation to the assessment and regulation of toxic substances.[34] The underlying principles of CEPA are to ensure pollution prevention, achieve sustainable development, protect biological diversity, exercise precaution in cases of scientific uncertainty, adopt an ecosystem approach to

[30] A partial list of CEAA triggers for municipal projects is set out in Appendix 7 of the *Municipal Class Environmental Assessment*, which was approved under Ontario's *Environmental Assessment Act* in October 2000.
[31] "Environment" is defined as including water: see *Canadian Environmental Assessment Act*, S.C. 1992, c.37, section 2(1).
[32] *Canada Water Act*, R.S.C. 1985, c.C-11.
[33] *Canadian Environmental Protection Act*, S.C. 1999, c.33 (Royal Assent September 14, 1999).
[34] *Ibid.,* section 3(2) and Part V.

environmental management, and virtually eliminate persistent and bioaccumulative toxic substances.[35]

While CEPA does not specifically address drinking water quality, the Act nevertheless contains numerous provisions which address water pollution and environmental enforcement, and therefore provides some degree of protection for surface watercourses which serve as sources of drinking water.[36] These provisions include:

- creating a public right to formally apply for an investigation of suspected contraventions of CEPA (sections 17 to 21);

- creating a public right to bring a civil "environmental protection action" in respect of contraventions of CEPA (sections 22 to 38);

- creating a civil cause of action for loss or damage resulting from contraventions of CEPA (sections 39 and 40);

- requiring pollution prevention plans from companies whose commercial, manufacturing, processing or other activities involve toxic substances specified on Schedule 1 of CEPA (Part 4);

- establishing an extensive regime for identifying, assessing, and regulating toxic substances (Part 5);[37]

- establishing an extensive regime for identifying, assessing and regulating "animate products of biotechnology" (e.g. genetically modified organisms)(Part 6);

- regulating nutrients (e.g. phosphates) that may adversely affect or degrade aquatic ecosystems (sections 116 to 119);

- regulating ocean dumping and protecting the marine environment from land-based sources of pollution through non-regulatory means (sections120 to 137);

- controlling Canadian sources of international water pollution through regulations, interim orders or pollution prevention planning (sections 175 to 184);

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[35] *Ibid.*, Preamble.

[36] "Environment" is defined as including water: *Canadian Environmental Protection Act*, S.C. 1999, c.33, section 3(1).

[37] A substance may be deemed to be "toxic" if it is "entering or may enter the environment in a quantity or concentration or under conditions that, (a) have or may have an immediate or long-term harmful effect on the environment or its biological diversity; (b) constitute or may constitute a danger to the environment on which life depends; or (c) constitute or may constitute a danger in Canada to human life or health": *Canadian Environmental Protection Act*, S.C. 1999, c.33, section 64. If a substance is found to be toxic, it is added to the Schedule 1 list and may be subject to regulations governing the manufacturing, sale, storage, importation, transportation, or release of the substance into the environment. At the present time, the Schedule 1 list includes a number of well-known toxic substances such as PCBs, CFCs, lead, asbestos, mercury, vinyl chloride, dioxins, furans, and benzene.

- controlling the transboundary movement of hazardous waste, hazardous recyclable material, and prescribed non-hazardous waste for final disposal (sections 185 to 192);

- requiring companies or facilities to prepare emergency plans for toxic substances (Part 8); and

- imposing a duty on corporate officers and directors to take all reasonable care to ensure that the corporation complies with CEPA and regulations, orders and directions made under CEPA (section 280).

To date, a number of water-related regulations have been promulgated under CEPA (and its predecessor). For example, CEPA regulations have been made in relation to:

- ocean dumping (SOR/89-500);

- phosphorus concentrations (SOR/89-501);

- pulp and paper effluent chlorinated dioxins and furans (SOR/92-267); and

- pulp and paper mill defoamer and wood chips (SOR/92-268).

CEPA makes it an offence to contravene the Act or regulations, orders, or directions made under the Act (section 272). Persons convicted of contravening CEPA face substantial penalties, such as $1 million fines, jail terms, profit-stripping, restoration orders, and restitution orders (sections 272 to 294). In certain circumstances, a person charged with a CEPA offence may avoid prosecution by agreeing to undertake prescribed "environmental protection alternative measures" (sections 295 to 297).

Fisheries Act

First enacted in 1868 and presently administered by the Department of Fisheries and Oceans, the *Fisheries Act*[38] is primarily aimed at protecting fish and their habitat, rather than protecting drinking water quality or quantity.

However, the Act contains some strong provisions relating to water pollution, and therefore confers some degree of protection of surface watercourses which serve as sources of drinking water. These provisions include:

- prohibiting the harmful alteration, disruption or destruction of fish habitat (section 35(1));

- prohibiting the deposit of "deleterious substances"[39] into or near waters frequented by fish (section 36(3));

[38] *Fisheries Act*, R.S.C. 1985, c.F-14: <http://www.dfo-mpo.gc.ca>.
[39] The term "deleterious substance" is defined as a substance (or water containing a substance) that would degrade or alter water quality so that it is rendered, or is likely to be rendered, harmful to fish or fish habitat: *Fisheries Act*, R.S.C. 1985, c.F-14, section 34(1).

- enabling the passage of regulations in relation to the deposit of waste, pollutants or deleterious substances (sections 36(4), 36(5), and 43); and

- imposing civil liability for loss or expenses caused by the unlawful deposit of deleterious substances (section 42).

To date, a number of regulations have been made under the *Fisheries Act* in relation to the liquid effluent from various industrial sectors, including:

- chlor-alkali plants (C.R.C., c.811);

- meat and poultry plants (C.R.C., c.818);

- metal mining facilities (C.R.C., c.819);

- petroleum refineries (C.R.C., c.828);

- potato processing plants (C.R.C., c.829); and

- pulp and paper mills (SOR/92-269).

Persons convicted for contravening the above-noted "fish habitat" and "deleterious substance" prohibitions face substantial penalties under the *Fisheries Act*, such as $1 million fines, jail terms, profit-stripping, licence suspensions, and restoration orders (sections 40(2), 79.1, and 79.2).

(b) Provincial Regime

At the present time, Ontario lacks specialized safe drinking water legislation which specifically protects or regulates drinking water, particularly at the point of consumption.

Nevertheless, Ontario has enacted a number of environmental statutes which are relevant to drinking water quality and quantity within the province.[40] The principal environmental statutes in Ontario include:

- *Conservation Authorities Act;*

- *Environmental Assessment Act*;

- *Environmental Bill of Rights, 1993*;

[40] It should be noted that protection of groundwater and surface water may also be achieved by ensuring compliance with other non-environmental statutes, such as the *Dangerous Goods Transportation Act*, R.S.O. 1990, c.D.1 and the *Gasoline Handling Act*, R.S.O. 1990, c.G.4. See, for example, Swaigen J., *Toxic Time Bombs: The Regulation of Canada's Leaking Underground Storage Tanks* (Emond Montgomery Publications Ltd., 1995).

- *Environmental Protection Act*;

- *Lakes and Rivers Improvement Act*;

- *Ontario Water Resources Act*;

- *Public Lands Act*;

- *Water and Sewage Services Improvement Act*; and

- *Water Transfer Control Act*.

In addition, Ontario has enacted public health legislation (e.g. the *Health Promotion and Protection Act*) as well as legislation governing municipal institutions involved in the production and delivery of potable water (e.g. the *Municipal Act* and *Public Utilities Act*) and watershed management (eg. *Conservation Authorities Act*). These statutes are discussed below in the context of the municipal drinking water regime.

Ontario's statutory regime for protecting drinking water (and its sources) has been augmented by an extensive policy framework consisting of various objectives, guidelines, manuals, and codes of practice. For example, the MOE has developed a number of water-related policies, procedures and technical guidance documents relating to:

- water management policies, guidelines and provincial water quality objectives (Guideline B-1-2);

- protection and management of aquatic sediment quality (Guideline B-1-3);
- fill quality guidelines for lakefilling (Guideline B-1-4);

- resolution of well water quality problems resulting from winter road maintenance (Guideline B-3);

- drinking water standards (Guideline B-5-1);

- evaluation of construction activities impacting water resources (Guideline B-6);

- incorporation of the "reasonable use" concept in MOE groundwater management activities (Guideline B-7);

- determination of contaminant limits and attenuation zones (Guideline B-7-1);

- resolution of groundwater quality interference problems (Guidelines B-9 and B-9-1);

- potable water storage structures (Guideline B-12);

- design of water supply systems for small residential developments (Guideline B-14-2);

- use and storage of pesticides at water works (Guideline B-15);
- planning for sewage and water services (Guideline D-5);
- application of municipal responsibility for communal water and sewage services (Guideline D-5-2);
- servicing options statement (Guideline D-5-3);
- water quality impact risk assessment for individual on-site sewage systems (Guideline D-5-4);
- water supply assessment for private wells (Guideline D-5-5);
- treatment levels for municipal and private sewage works discharging to surface waters (Guidelines F-5 to F-5-5);
- separation distances for sewer and watermain construction (Guidelines F-6 and F-6-1);
- minimum accepted level of servicing for municipal and private communal systems (Guideline F-7);
- phosphorus removal facilities at municipal, institutional and private sewage treatment works (Guidelines F-8 and F-8-1);
- use of holding tanks in sewage systems (Guideline F-9);
- manual for on-site sewage systems (Guideline F-9-1);
- sampling and analysis requirements for municipal and private sewage treatment works (Guidelines F-10 and F-10-1).[41]

Of Ontario's various environmental statutes, the laws which are most directly relevant to protecting drinking water (and its sources) are the *Ontario Water Resources Act, Environmental Protection Act, Environmental Assessment Act,* and *Environmental Bill of Rights, 1993*. The essential elements of these statutes are summarized below.

Ontario Water Resources Act

Arguably, the *Ontario Water Resources Act* ("OWRA") is the most important law in relation to drinking water quality and quantity within the province. The OWRA is a general water

[41] Generally, see the MOE's Manuals and Guidelines Catalogue: <http://www.ene.gov.on.ca/envision/gp/index.htm>

management statute whose origins date back to the 1950s,[42] and applies to both groundwater and surface water.[43]

Administered by the MOE, the OWRA contains a number of important mechanisms which assist in protecting drinking water and its sources. These mechanisms include:

- prohibiting the discharge of polluting materials in or near water (section 30);
- prohibiting or regulating the discharge of sewage (section 31);
- ordering measures to prevent, reduce or alleviate impairment of water quality (section 32);
- defining and protecting sources of public water supply (section 33);
- regulating water takings in excess of 50,000 litres/day (section 34);
- regulating well drilling and construction (sections 36 to 50);
- approving water works (section 52);[44]
- approving sewage works (section 53);
- enabling the Ontario Clean Water Agency ("OCWA")[45] to provide or operate water works or sewage works for municipalities (sections 63 to 73);
- designating and regulating areas of public water or sewage services (section 74); and
- imposing a duty on corporate officers and directors to take all reasonable care to prevent the corporation from discharging materials into or near water that may impair water quality (section 116).

In addition, the OWRA enables the passage of regulations on a wide variety of water-related matters (sections 75 to 77). To date, this regulatory authority has been used to promulgate regulations relating to:

- licencing of well contractors and technicians, and requirements for well construction, operation, and abandonment (Regulation 903);

[42] See *Ontario Water Resources Commission Act*, S.O. 1956, c.3; S.O. 1957, c.16.
[43] "Water" is defined as "a well, lake, river, pond, spring, stream, reservoir, artificial watercourse, intermittent watercourse, groundwater or other water or watercourse": see *Ontario Water Resources Act*, R.S.O. 1990, c.O.40, section 1.
[44] As described below, a municipal project which requires a section 52 approval may also be subject to the planning requirements prescribed under the *Municipal Class Environmental Assessment* (approved October 2000).
[45] OCWA was established in 1993 under the *Capital Investment Plan Act*, S.O. 1993, c.23 in order to, *inter alia*, operate provincial and municipal water treatment plants, and assist municipalities in the planning, construction and delivery of sewage and water services.

- classifying water works and sewage works, licencing of facility operators, and operating standards (O.Reg. 435/93);

- exempting minor watermain, sewer or stormwater management projects from approval requirements (O.Reg. 525/98);

- water takings and transfers (O.Reg. 285/99); and

- drinking water treatment, testing, and reporting (O.Reg. 459/00).

The OWRA makes it an offence to contravene either the Act or the regulations (section 107), and various penalties (eg. fines, jail terms, profit-stripping, restitution, restoration order, forfeiture, licence suspension) may be imposed against individuals or corporations convicted under the OWRA (sections 108 to 112). In addition to prosecution, administrative penalties may also be available (section 106.1) It should be further noted that the recently enacted *Toughest Environmental Penalties Act, 2000* increases penalties for certain offences under the OWRA and the Drinking Water Protection Regulation.[46]

Significantly, the Drinking Water Protection Regulation (O.Reg. 459/00) has been in effect in Ontario since August 2000. This regulation, which essentially updates and replaces the former *Ontario Drinking Water Objectives* ("ODWO") and related policies,[47] may be summarized as follows:

- applies to all water treatment and distribution systems which require approval under section 52 of the OWRA, subject to certain exceptions (section 3);[48]

- directs the MOE Director to have regard for the Ontario Drinking Water Standards when considering an application for approval under section 52 of the OWRA (section 4);

- requires water systems which utilize groundwater to provide a minimum level of treatment consisting of disinfection (section 5(1));

- requires water systems which utilize surface water to provide a minimum level of treatment consisting of chemically assisted filtration and disinfection, or an equivalent treatment (section 5(2));

- requires water system owners to ensure that no water enters the distribution system or plumbing unless it is has been treated with chlorination or an equivalent treatment (section 5(3));

[46] See *Toughest Environmental Penalties Act, 2000*, S.O. 2000, c.22, section 2 for OWRA-related amendments (Royal Assent November 21, 2000).

[47] For example, the new regulation supersedes former MOE guidelines relating to treatment requirements for municipal and communal water works using surface water (B-13), chlorination of potable water supplies (B-13-3), and treatment requirements for municipal and communal water works using groundwater (B-14).

[48] For example, the regulation does not apply to systems that supply 50,000 litres/day or less on at least 88 days of a 90 day period, or systems that are not capable of supplying water at a rate greater than 250,000 litres/day, unless the system serves more than five private residences: see O.Reg.459/00, subsections 3(3) and (4).

- provides a transitional period for pre-existing water systems to come into compliance with the new minimum treatment requirements (section 5(5));

- enables new approvals under section 52 of the OWRA to dispense with the need to disinfect and chlorinate if certain preconditions are satisfied (section 6);[49]

- prescribes mandatory water sampling and analysis requirements (section 7(1) and Schedule 2);

- requires water sampling to be carried out by accredited laboratories, subject to certain exceptions (section 7(3))[50] and other information requirements (section 7(4));

- requires water system owners to notify the MOE Director as to which laboratory will be conducting the sampling and analysis (section 7(5));

- restricts subcontracting of sampling/analysis work, and restricts the use of laboratories located outside of Ontario (sections 7(7) and (8));

- requires laboratories to submit analysis results to the MOE Director at the same time that the results are sent to water system owners (section 7(10));

- imposes a duty on water system owners and laboratories to provide immediate notice to the medical officer of health and the MOE where a sample result shows an exceedance of a prescribed standard, or otherwise contains an indicator of adverse water quality (e.g. presence of *E. coli* or total coliforms) (section 8 and Schedule 6);

- requires water system owners to take corrective action (e.g. resample or increase chlorination) where notice of adverse water quality has been provided (section 9 and Schedule 6);

- requires water system owners to post warning notices if prescribed sampling/analysis requirements have not been followed, or if corrective action has not been taken in respect of an exceedance of a microbiological parameter (section 10);

- requires water system owners to make sampling reports and related information publicly available (section 11);

- requires water system owners to file quarterly summary reports with the MOE Director, and to make such reports available to the public (section 12);

[49] Exceptions to disinfection and chlorination requirements are permissible only if: (a) the source is groundwater; (b) the application for approval includes a municipal resolution, written consent from the medical officer of health, two years' worth of water sampling data, documentation concerning public notice and comment, confirmation that standby disinfection equipment is available, and hydrogeological information regarding the aquifer, well, well head protection, and impact of existing/anticipated land uses: O.Reg. 459/00, section 6.

[50] These exceptions include: analysis carried out by continuous monitoring equipment; analysis for certain parameters which are not health-related; and operational analysis carried out by licenced operators or qualified persons: O.Reg.459/00, section 7(4) and Schedule 3.

- requires water system owners to periodically file reports by qualified professional engineers (section 13);[51] and

- requires water system owners to retain documents, reports and records for at least five years (section 14).

To assist in the interpretation and application of the Drinking Water Protection Regulation, the MOE has produced guidance documents and technical briefs on various topics, such as:

- Ontario Drinking Water Standards;

- engineer's reports for waterworks;

- sampling requirements;

- minimum treatment requirements;

- laboratory accreditation;

- licencing of analytical staff at water works;

- corrective actions for adverse drinking water quality incidents;

- notification requirements;

- public notices and quartlerly consumer reports;

- applying for approval for municipal and private water works.[52]

In addition, the MOE has undertaken public consultation on additional measures for protecting drinking water for small water works in Ontario.[53]

Environmental Protection Act

As Ontario's main anti-pollution statute, the *Environmental Protection Act* ("EPA")[54] is administered by the MOE but does not specifically address drinking water quality, particularly at the point of consumption.

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[51] The purpose of the engineer's report is to: (a) assess the potential for microbiological contamination; (b) identify operational and physical improvements to mitigate this potential; and (c) determine an appropriate monitoring program: see Ministry of the Environment, *Terms of Reference for Engineers' Reports for Water Works* (August 2000; rev. January 2001), at page 1.

[52] See Ministry of Environment, *Ontario's New Drinking Water Protection Regulation*: <http://www.ene.gov.on.ca/envision/WaterReg/WaterReg.htm>.

[53] *Ibid.*

[54] *Environmental Protection Act*, R.S.O. 1990, c.E.19. Generally, see Saxe, *Ontario Environmental Protection Act Annotated* (Canada Law Book, looseleaf service).

Nevertheless, the EPA does contain a number of general provisions which can be used to protect surface water and groundwater against contamination. These provisions include:

- prohibiting discharges of contaminants[55] into the natural environment[56] in an amount, concentration or level in excess of prescribed regulatory standards (section 6);[57]

- authorizing the issuance of binding administrative orders to prevent, control, minimize or remediate discharges of contaminants into the natural environment (sections 7 to 12, sections 17 to 18, section 97, Part XI, and Part XIV);

- prohibiting the discharge of contaminants into the natural environment that causes or is likely to cause an adverse effect[58] (section 14);[59]

- regulating structures located on ice over water (Part IV);

- approving and regulating waste disposal sites and waste management systems (Part V);

- imposing duties to report and clean up pollutant spills, and imposing civil liability for loss or damage arising from pollutant spills (Part X);[60]

- authorizing conditions of approval (including permits and approvals under the OWRA) which require proponents to provide financial assurance to secure performance of environmental protection measures (Part XII); and

- imposing a duty on corporate officers and directors to take all reasonable care to prevent the corporation from causing or permitting unlawful discharges of contaminants into the natural environment (section 194).

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[55] "Contaminant" is defined broadly as "any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from human activities that may cause an adverse effect": see *Environmental Protection Act*, R.S.O. 1990, c.E.19, section 1(1).

[56] "Natural environment" is defined as "the air, land and water, or any combination or part thereof, of the Province of Ontario": see *Environmental Protection Act*, R.S.O. 1990, c.E.19, section 1(1).

[57] Significantly, the section 6 prohibition does not apply to "animal wastes disposed of in accordance with normal farm practices": see *Environmental Protection Act*, R.S.O. 1990, c.E.19, section 6(2).

[58] "Adverse effect" is defined as "one or more of: (a) impairment of the that quality of the natural environment for any use that can be made of it; (b) injury or damage to property or plant and animal life; (c) harm or material discomfort to any person; (d) an adverse effect on the health of any person; (e) impairment of the safety of any person; (f) rendering any property or plant or animal life unfit for human use; (g) loss of enjoyment of normal use of property; and (h) interference with the normal conduct of business": see *Environmental Protection Act*, R.S.O. 1990, c.E.19, section 1(1).

[59] Significantly, the anti-pollution prohibition in section 14(1) does not apply to certain adverse effects caused by "animal wastes disposed of in accordance with normal farming practices": see *Environmental Protection Act*, R.S.O. 1990, c.E.19, section 14(2).

[60] "Pollutant" is defined as "a contaminant other than heat, sound, vibration or radiation, and includes any substance from which a pollutant is derived", while "spill" is defined as "a discharge, (a) into the natural environment; (b) from or out of a structure, vehicle or container; and (c) that is abnormal in quality or quantity in light of all the circumstances of the discharge": see *Environmental Protection Act*, R.S.O. 1990, c.E.19, section 91(1).

In addition, the EPA creates broad regulation-making authority on a lengthy list of environmental matters (sections 175.1 to 177). To date, this EPA authority has been used to promulgate regulations on various water-related topics, such as:

- deep well disposal (Regulation 341);

- discharge of sewage from pleasure boats (Regulation 343);

- marina facilities (Regulation 351); and

- sewage systems (Regulations 358 and 359).

Moreover, it should be noted that the MOE has used the EPA – not the OWRA – as the statutory basis for its Municipal-Industrial Strategy for Abatement ("MISA") program. Under the MISA program, a number of regulations have been passed to set effluent limits and monitoring requirements for various sectors which discharge wastewater into Ontario's watercourses.[61]

The EPA makes it an offence to contravene either the Act, regulations, orders, or conditions of approval (section 186), and various penalties (e.g. fines, jail terms, profit-stripping, restitution, remedial orders, forfeiture, or licence suspension) may be imposed against individuals or corporations upon conviction under the EPA (sections 187 to 193). Administrative penalties may also be available (section 182.1). It should be further noted that the *Toughest Environmental Penalties Act, 2000* has increased penalties for certain offences under the EPA or regulations.[62]

Environmental Assessment Act

As Ontario's primary environmental planning statute, the *Environmental Assessment Act* ("EAA") is administered by the MOE but does not specifically address drinking water quality, particularly at the point of consumption.

However, with respect to undertakings caught by the EAA,[63] proponents are generally required to identify and evaluate ecological, social, cultural and economic impacts that may be caused by the undertaking and the alternatives.[64] Such undertakings cannot proceed unless the proponent

[61] See, for example, O.Reg. 537/93, as am. (petroleum sector); O.Reg. 760/93, as am. (pulp and paper sector); O.Reg. 560/94, as am. (metal mining sector); O.Reg. 561/94, as am. (industrial metals sector); O.Reg. 562/94, as am. (metal casting sector); O.Reg. 63/95, as am. (organic chemical and manufacturing sector); O.Reg. 64/95, as am. (inorganic chemical sector); O.Reg. 214/95 (iron and steel manufacturing sector); and O.Reg. 215/95, as am. (electric power generation sector).

[62] See *Toughest Environmental Penalties Act, 2000*, S.O. 2000, c.22, section 1 for EPA-related amendments (Royal Assent November 21, 2000).

[63] In general, public sector undertakings (e.g. provincial or municipal projects) are subject to the EAA unless exempted, while private sector undertakings are not subject to the EAA unless designated by regulation as a major commercial or business enterprise or activity to which the EAA applies: see *Environmental Assessment Act*, R.S.O. 1990, c.E.18, section 3.

[64] The content of the proponent's environmental assessment is prescribed by "Terms of Reference", which are to be developed with agency and public input: see *Environmental Assessment Act*, R.S.O. 1990, c.E.18, sections 5.1 to 6.1).

completes the required environmental assessment ("EA") with agency and public input, and receives approval to proceed from the Minister of the Environment.[65] Given the public interest purpose of the EAA,[66] the Minister may reject environmentally unsound undertakings, and, conversely, may approve environmentally sound undertakings, subject to terms and conditions which prevent, reduce or mitigate adverse environmental effects.[67] Thus, the EA process for individual undertakings can be used to safeguard groundwater or surface watercourses which serve as sources of drinking water.[68]

In addition, the Ministry of the Environment has utilized the provisions of the EAA (Part II.1) to approve "Class EAs" which prescribe streamlined EA procedures for certain defined classes of projects. In general, projects caught by the Class EA approach tend to be small-scale, frequently recurring activities with minor, predictable and mitigable environmental impacts.[69] Unlike the individual EA process (described above), the proponent of a project under a Class EA simply follows the prescribed planning process (eg. public notices, comment opportunities, environmental study reports, etc) without the need for project-specific approval from the Minister of the Environment or the Environmental Review Tribunal. Most Class EAs, however, include "bump up" provisions which allow the Minister to order proponents to carry out an individual EA of particularly significant or controversial projects.

Significantly, the Minister of the Environment has approved a Class EA for municipal road, water, and wastewater (e.g. sewage and stormwater) projects.[70] In the context of water projects, the stated purpose of the municipal Class EA is to ensure that "projects developed under this Class EA will be undertaken to address problems affecting the operation and efficiency of existing water systems, to accommodate future growth of communities, or to address water source contamination problems".[71] The Class EA specifically recognizes environmental and health public concerns relating to municipal drinking water systems.[72]

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[65] *Environmental Assessment Act*, R.S.O. 1990, c.E.18, section 5. Note that the Minister may refer the application, in whole or in part, to the Environmental Review Tribunal [formerly the Environmental Assessment Board]: see *Red Tape Reduction Act, 2000*, S.O. 2000, c.26 (Royal Assent December 6, 2000)) for a public hearing and decision: see *Environmental Assessment Act*, R.S.O. 1990, c.E.18, sections 9.1 and 9.2.

[66] "The purpose of this Act is the betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management in Ontario of the environment": see *Environmental Assessment Act*, R.S.O. 1990, c.E.18, section 2.

[67] *Environmental Assessment Act*, R.S.O. 1990, c.E.18, section 9.

[68] For example, a proposed landfill may be approved subject to conditions which require leachate collection and/or treatment, stormwater management, groundwater and surface water monitoring, public reporting, contingency plans, and financial assurance.

[69] For example, Class EA's have been approved in relation to various provincial and municipal activities and projects.

[70] Municipal Engineers Association, *Municipal Class Environmental Assessment* (June 2000), which was approved by the Minister of Environment on October 4, 2000. This new Class EA updates and consolidates the pre-existing Class EAs for municipal road projects, and for municipal water and wastewater projects.

[71] *Ibid.*, page C-4.

[72] "The well-being of human life may be affected…by such problems as: groundwater or surface water pollution; contamination of water through the distribution system; [or] inadequate treatment of raw water. Water may not conform to the regulated or required water quality objectives as a result of such factors as: contamination of a distribution system; deterioration in quality of the water source; [or] inefficient operation of the water treatment plant": see *Municipal Class Environmental Assessment* (approved October 2000), pages C-4 to C-5.

The planning requirements of the municipal Class EA may be summarized as follows:

- municipal projects are categorized and listed in Schedules A, B or C;

- **Schedule A** projects generally include normal or emergency operation and maintenance activities, and are essentially "pre-approved" without further planning or study by the proponent;

- **Schedule B** projects generally include improvements or minor expansions of existing facilities, and require some environmental "screening", documentation, and public consultation by the proponent; and

- **Schedule C** projects generally include the construction of new facilities or major expansions of existing facilities, and must proceed through the multi-stage EA planning process prescribed in the Class EA.[73]

The current Class EA has categorized municipal water projects in the following manner:

- **Schedule A** includes: installing new service connections; cleaning or re-lining watermains; repairing or replacing treatment, distribution or storage equipment; increasing pumping capacity; upgrading water treatment plants to existing rated capacity; installing chemical treatment or filtration equipment in existing facilities; installing or deepening wells at an existing municipal well site; and extending or enlarging distribution facilities within existing road allowances or utility corridors;[74]

- **Schedule B** includes: extending or enlarging distribution facilities outside existing road allowances or utility corridors; disposal facilities for process wastewater; expanding water treatment plants where land acquisition is required; increasing pumping station capacity; establishing new water storage facilities; establishing wells at new municipal well sites; water crossings by new or replacement facilities; increasing water treatment plant capacity beyond existing rated capacity without construction of new works; and replacing water intake pipes for surface water sources;[75]

- **Schedule C** includes: constructing new water systems; constructing new water treatment plants; expanding water treatment plants beyond existing rated capacity through construction of new facilities; establishing a new surface water source; and artificially recharging existing aquifers from surface water sources for water supply purposes.[76]

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[73] The planning process under the Class EA for a Schedule C project consists of five iterative phases: (a) identify the problem/opportunity; (b) describe/review alternative solutions and identify the preferred solution; (c) assess alternative methods of implementing the preferred solution; (d) prepare an Environmental Study Report ("ESR"); and (e) implement/monitor the project. For a Schedule B project, the planning process is somewhat less rigorous, and generally consists of maintaining a project file and providing public review/comment opportunities through the issuance of a Notice of Completion: see *Municipal Class Environmental Assessment* (approved October 2000), pages A-20 to A-33, and A-64 to A-71.

[74] *Ibid.*, Appendix 1, pages 1-11 to 1-12.

[75] *Ibid.*, pages 1-15 to 1-16.

[76] *Ibid.*, page 1-18.

It is important to note that the municipal Class EA does not replace, preempt or supersede other federal or provincial laws which may be applicable to a particular municipal water project.[77] For example, even though a new municipal water treatment plant may be planned and designed under the Class EA, the necessary technical approval(s) under the OWRA (e.g. section 52) will still be required, as described above.

In practice, an OWRA approval will not be issued for a Schedule C project until after the expiry of the 30 day review period which follows the proponent's filing of the Environmental Study Report ("ESR") on the public record (or the filing of an addendum to an ESR). Similarly, an OWRA approval will not be issued for a Schedule B project until after the expiry of the 30 day review period which follows the proponent's filing of the Notice of Completion. If, during the 30 day review period, a member of the public requests that the project be "bumped up" to individual EA, then the OWRA approval will not issue until the Minister has made a decision on the "bump up" request.[78]

It should be further noted that the Class EA process is, in essence, a self-assessment process. Where the provisions of the Class EA apply to a project, it is the proponent's responsibility to ensure that the prescribed planning requirements are fully complied with before the project is undertaken.[79] Failure to comply with the Class EA process constitutes an offence under section 38 of the EAA, and persons convicted of contravening the EAA may be subject to small fines.[80]

Environmental Bill of Rights, 1993

Ontario's *Environmental Bill of Rights, 1993* ("EBR")[81] is largely a procedural statute designed to ensure public participation in environmental decision-making, increase governmental accountability for environmental decision-making, and increase access to the courts for environmental protection purposes.[82]

While the EBR is directed at conserving, protecting and restoring a "healthful" environment,[83] the EBR does not specifically regulate drinking water quality or quantity. However, the EBR contains a number of mechanisms which can be utilized to address drinking water matters. These mechanisms include:

- establishing an electronic registry to provide information to the public about environmental matters (section 5 and 6);

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[77] *Ibid.*, pages A-45 to A-48.
[78] *Ibid.*, pages A-46 to A-47. For more information on the "bump up" process [now called "Part II order"], see *Municipal Class Environmental Assessment* (approved October 2000), pages A-35 to A-40.
[79] *Ibid,*. at page A-5.
[80] *Environmental Assessment Act*, R.S.O. 1990, c.E.18, section 38.
[81] *Environmental Bill of Rights, 1993*, S.O. 1990, c.28: <http://www.eco.on.ca>.
[82] Generally, see Muldoon and Lindgren, *The Environmental Bill of Rights: A Practical Guide* (Emond Montgomery, 1993).
[83] "Environment" is defined as including "water", which is further defined as "surface water and groundwater": see sections 1(1) and 2 of the *Environmental Bill of Rights*, S.O. 1993, c.28.

- requiring certain ministries (e.g. the Ministry of the Environment, Ministry of Natural Resources, Ministry of Health, and Ministry of Agriculture, Food and Rural Affairs)[84] to develop "Statements of Environmental Values" which explain how the ministries are going to apply the purposes of the EBR in their environmental decision-making (sections 7 to 11);

- requiring certain ministries to provide public notice and comment opportunities in relation to proposed laws, regulations, instruments,[85] or policies which are environmentally significant (sections 12 to 37);

- creating a public right to seek leave to appeal certain instruments to an appellate body under certain circumstances (sections 38 to 48);

- establishing an independent Environmental Commissioner who monitors, investigates and reports upon governmental compliance with the EBR (Part III);

- creating a public right to seek a review, repeal or revocation of existing laws, regulations instruments or policies on the grounds that they are inadequate to protect the environment (Part IV);[86]

- creating a public right to seek an investigation of suspected contraventions of prescribed laws, regulations or instruments (Part V);

- creating a new civil cause of action to protect "public resources"[87] against unlawful conduct causing significant environmental harm (sections 82 to 102);

- enhancing the ability of persons to sue in relation to public nuisances causing environmental harm (section 103);[88] and

- expanding "whistle-blower" protections for employees who report environmental misconduct by their employers (Part VII).

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[84] See O.Reg. 73/94 (as am.), section 1.

[85] The term "instrument" refers to statutory approvals, orders, permits, licences, and authorizations: see section 1 of the *Environmental Bill of Rights, 1993*, S.O. 1993, c.28.

[86] Alternatively, members of the public can use Part IV of the EBR to request the passage of a new law, regulation or policy to protect the environment: *Environmental Bill of Rights*, S.O. 1993, c.28, section 61(2).

[87] "Public resource" is defined as including "water, [except] water in a body of water the bed of which is privately owned and on which there is no public right of navigation": section 82 of the *Environmental Bill of Rights*, S.O. 1993, c.28. It should be noted that the EBR places restrictions on this new civil cause of action where the complaint involves odour, noise or dust from an agricultural operation: section 84(4) of the *Environmental Bill of Rights*, S.O. 1993, c.28. To date, the only lawsuit brought under the EBR's new right to sue is an action that claims tire dump toxics have contaminated (or are about to contaminate) an aquifer that serves as a source of the plaintiffs' well water: see Environmental Commissioner, *Annual Report 1999-2000: Changing Perspectives*, at page 115.

[88] The EBR's public nuisance provision has been invoked in a class action proceeding which claims that a municipal water treatment plant has supplied residents of Fort Erie with drinking water containing iron rust and micro-organisms in levels that exceed the Ontario Drinking Water Objectives: see *Annual Report 1997: Open Doors – Ontario's Environmental Bill of Rights*, at page 75. It should be noted that the EBR's public nuisance provision is subject to rights and defences available to agricultural defendants under the *Farm Practices Protection Act*: section 103(2) of the *Environmental Bill of Rights*, S.O. 1993, c.28.

To date, the procedural rights and remedies under the EBR have been used in relation to various drinking water issues. For example, the OWRA has been prescribed as an Act to which the EBR applies,[89] and a number of instruments under the OWRA have been prescribed for the purposes of the EBR.[90]

Similarly, pursuant to Part III of the EBR, the Environmental Commissioner of Ontario has raised concerns about drinking water (and its sources) in virtually every annual report filed with the Ontario Legislature since 1994.[91] A special report filed in July 2000 by the Environmental Commissioner in the wake of the Walkerton tragedy expressed similar concerns about groundwater and intensive farming.[92]

Ontario residents have also filed various EBR applications for review, investigation, and leave to appeal on matters arising under the OWRA. For example, the EBR has been used by Ontarians to:

- request a review of the MOE's proposed interim Ontario Drinking Water Objective ("ODWO") for tritium at a level far in excess of what had been recommended by MOE's Advisory Committee on Environmental Standards ("ACES");[93]

- request the MOE to review the need to develop (or revise) ODWOs for trichloroethylene, *Cryptosporidium*, viruses, dichloroethane, dichloroethylene, and atrazine;[94]

- request the MOE to review the need to develop a comprehensive groundwater management strategy;[95] and

- request the MOE to review the need to develop a *Safe Drinking Water Act* in Ontario.[96]

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[89] O.Reg. 73/94 (as am.), section 3 (proposals for regulations); section 6 (application for review); and section 8 (application for investigation).

[90] Sections 3 to 9 of O.Reg. 681/94 (as am.) list several OWRA permits, approvals, orders and directions as being subject to the EBR. This generally means that such instruments may be subject to mandatory notice/comment, leave to appeal applications, applications for review, applications for investigation, and/or the new civil cause of action under Part VI of the EBR.

[91] Environmental Commissioner of Ontario, *Annual Report 1994-95: Opening the Doors to Better Environmental Decision-Making*, pages 51 to 52; *Annual Report 1996: Keep the Doors Open to Better Environmental Decision Making*, pages 17 to 20, and 44; *Annual Report 1997: Open Doors – Ontario's Environmental Bill of Rights*, page 47; *Annual Report 1998: Open Doors – Ontario's Environmental Bill of Rights*, pages 4 to 5; *Annual Report 1999-2000: Changing Perspectives*, pages 34 to 42, and 118.

[92] Environmental Commissioner of Ontario, *The Protection of Ontario's Groundwater and Intensive Farming: Special Report to the Legislative Assembly of Ontario* (July 27, 2000).

[93] Environmental Commissioner of Ontario, *Annual Report 1994-95: Opening the Doors to Better Environmental Decision Making*, page 47. After considerable delay, the MOE ultimately decided against adopting the more stringent level recommended by ACES: see O.Reg.459/00, Schedule 5 (tritium).

[94] *Ibid.,* at pages 48 to 49, and *Annual Report 1994-95: Appendix*, Part 6. In all instances, the MOE decided that the requested reviews were not warranted.

[95] *Ibid.,* at pages 51 to 52. Again, the MOE decided against conducting the requested review.

[96] After undertaking the requested review in the fall of 2000, the MOE ultimately concluded there was no need for a *Safe Drinking Water Act* in Ontario: H.Wong (Director, MOE Water Policy Branch), Letter dated October 30, 2000 to CELA et al. [pers. com.].

(c) Municipal Regime

Ontario has enacted a number of laws creating, empowering and regulating local institutions – such as municipal corporations, public utility commissions, conservation authorities, and medical officers of health – which are involved in water resource management and public health matters. While it is beyond the scope of this paper to provide a detailed description of such laws, it is instructive to briefly review the nature and content of certain laws which, arguably, are the most directly relevant to drinking water quality and quantity at the local level. These laws include:

- *Municipal Act;*
- *Planning Act;*
- *Public Utilities Act;*
- *Conservation Authorities Act;* and
- *Health Promotion and Protection Act.*

Municipal Act

Administered by the Ministry of Municipal Affairs and Housing, the *Municipal Act*[97] ("MA") contains a comprehensive code for the creation, expansion, restructuring and dissolution of municipalities in Ontario (Part I). The MA also prescribes the composition, duties, and meeting requirements of municipal councils (Parts II to IV), and establishes various officers of the municipal corporation (Part VI).

Once established, municipalities are empowered by the MA to enact and enforce by-laws on a wide variety of matters, including water-related issues. For example, municipal by-law powers may be used to:

- protect "the health, safety, morality and welfare of the inhabitants of the municipality" (section 102);
- acquire or expropriate lands for municipal purposes (section 191);
- enter into water supply contracts (section 207, para.2);
- enter into agreements with other municipalities for the joint operation of waterworks, systems and services (section 207, para.5 and 6);
- construct drainage and flood control works (section 207, para.13 to 17, 85, 88);
- regulate harbours, wharves, docks (section 207, para.31 to 38);

[97] *Municipal Act*, R.S.O. 1990, c.M.45. Generally, see I. Rogers, *The Law of Canadian Municipalities,* looseleaf (Carswell).

- authorize the improvement, alteration or extension of any public uility undertaking controlled or managed by the municipal council or a public utility commission (section 207, para.58);

- regulate water tanks and towers (section 207, para.96);

- conduct investigations and reports regarding waterworks or water supply systems (section 207, para.98);

- authorize construction of water pipes under or across highways under municipal jurisdiction (section 207, para.118);

- regulate sewer discharges (section 207, para.150);

- impose special water charges on buildings which constitute a heavy load on the municipal water system, thereby requiring additional capacity (section 218);

- setting water rates (section 221); and

- require building owners to connect to municipal water works (section 222);

Persons convicted of offences under by-laws passed under the MA face fines and prohibition orders (sections 320 to 327). In addition, the MA provides that local ratepayers may bring civil actions to restrain contraventions of municipal by-laws (section 328).

Planning Act

Administered by the Ministry of Municipal Affairs and Housing, the *Planning Act*[98] ("PA") enables municipalities to regulate land use and development at the local (or regional) level, subject to a provincial policy framework. The stated purposes of the PA include promoting "sustainable economic development in a healthy natural environment" (section 1.1).

While the PA does not regulate drinking water *per se*, a number of provisions in the PA can be used by municipalities to protect aquifers or surface watercourses which serve as sources of drinking water. These provisions include:

- declaring a provincial interest in protecting ecological systems and functions, conserving natural resources, ensuring the supply and efficient use of water, ensuring adequate provision of sewage and water services, ensuring the orderly development of safe and healthy communities, and protecting public health and safety (section 2);

- enabling the provincial government to issue policy statements on matters of provincial interest, and requiring municipalities to have regard for such policy statements (section 3);

[98] *Planning Act*, R.S.O. 1990, c.P.13. Generally, see I. Rogers, *Canadian Law of Zoning and Planning*, looseleaf (Carswell).

- establishing procedures for the preparation, approval, appeal and amendment of municipal Official Plans, which provide long-term planning direction (Part III);

- prohibiting the undertaking of public works, or the passage of by-laws, that are not in conformity with an approved Official Plan (section 24);

- establishing procedures for the preparation, approval, appeal and amendment of zoning by-laws, holding by-laws, interim control by-laws, site plan control by-laws, and other related by-laws (Part V);

- empowering municipalities to prohibit or restrict the use of land, or the erection or use of buildings or structures, particularly in areas containing significant natural heritage or land that is "a sensitive groundwater recharge area, or headwater area, or land that contains a sensitive aquifer" (section 34(1));

- empowering the Minister of Municipal Affairs and Housing to exercise zoning and subdivision control powers on any lands in Ontario (section 47); and

- establishing procedures for the preparation, approval, appeal, and amendment of plans of subdivision (Part VI).

Persons convicted of offences under the PA (e.g. violation of a section 34 zoning by-law) face fines and prohibition orders (section 67).

Pursuant to section 3 of the PA, the Ontario government has released a Provincial Policy Statement ("PPS") in relation to certain matters of provincial interest. For example, the PPS outlines planning principles which, among other things, emphasize the need to protect the environment and public health, protect resources for environmental benefits, and reduce public costs and risks to Ontarians "by directing development away from areas where there is a risk to public health or safety".[99] Similarly, the substantive policies in the PPS direct that:

- a coordinated approach should be undertaken by municipalities dealing with transboundary issues such as infrastructure and public service facilities, ecosystem and watershed matters, and shoreline and riverine hazards (Policy 1.1.1(e));

- development and land use patterns which may cause environmental or public health concerns will be avoided (Policy 1.1.1 (f));

- land requirements and land use patterns will be based on densities which: efficiently use land, resources, infrastructure and public service facilities; avoid the need for unnecessary and/or uneconomical expansion of infrastructure; and are appropriate to the type of sewage and water systems which are planned or available (Policy 1.1.2(b));

[99] Ministry of Municipal Affairs and Housing, *Provincial Policy Statement* (1997): http://www.mah.gov.on.ca/business/policye

- economic prosperity will be supported by water conservation and efficiency, and by ensuring that major facilities (e.g. landfills, sewage treatment plants, etc.) and sensitive land uses are appropriately designed, buffered and/or separated from each to prevent adverse effects from odour, noise and other contaminants (Policy 1.1.3(d) and (g));

- full municipal sewage and water services are the preferred form of servicing for urban areas and rural settlement areas (Policy 1.3.1.1(a));

- natural heritage features and areas (e.g. significant wetlands, valleylands, fish habitat, etc.) will be protected from incompatible development (Policy 2.3.1);

- the quality and quantity of groundwater and surface water and the function of sensitive groundwater recharge/discharge areas, aquifers and headwaters will be protected or enhanced (Policy 2.4.1); and

- development will generally be directed to areas outside of hazardous lands adjacent to the shorelines of: the Great Lakes-St. Lawrence River System; large inland lakes impacted by flooding, erosion and/or dynamic beach hazards; and river and stream systems impacted by flooding and/or erosion hazards (Policy 3.1.1).[100]

As noted above, municipalities must merely "have regard" for these PPS principles and policies when exercising authority under the PA. In addition, the PPS recognizes that infrastructure projects may be planned or approved under other legislation, such as the OWRA and EAA (see above). In such cases, PPS principles and policies should be "considered as part of the evaluation conducted under the relevant environmental assessment process".[101]

Public Utilities Act

The *Public Utilities Act*[102] contains a number of provisions governing municipal operation of drinking water systems or other public utilities. These provisions include:

- empowering municipalities to establish waterworks, and to expropriate lands necessary for operating or protecting waterworks "or preserving the purity of the water supply" (section 2 and 3);

- enabling municipalities to construct and maintain various facilities (e.g. reservoirs, plants, machinery, pipes, etc.) necessary for waterworks (sections 4 to 7);

- permitting municipalities to regulate the distribution and use of water, and to set water rates and fees (sections 8 and 9 and Part III);
- authorizing municipalities to supply water to owners or occupiers of land outside municipal boundaries (section 11);

[100] *Ibid.*
[101] *Ibid.*
[102] *Public Utilities Act*, R.S.O. 1990, c.P.52. Section 1 of this Act defines "public utility" as "water, artificial or natural gas, electrical power or energy, steam or hot water".

- empowering municipalities to regulate water supply, and to prohibit wrongful use of water, in order to "secure to the inhabitants of the municipality a continued and abundant supply of pure and wholesome water" (section 12);

- prohibiting persons from depositing "injurious" or "offensive" matter into the water or waterworks, or committing any wilful damage or injury to the works, pipes or water (section 13);[103]

- stipulating that any surplus revenues generated from the supply of a public utility be directed at retiring debentures or other capital debt, and thereafter forming part of general municipal funds (section 35);

- enabling municipalities to establish (with electoral assent)[104] public utility commissions to construct, control and manage municipal waterworks or other public utilities (sections 38 to 40);[105]

- vesting public utility commissions with all powers, rights, authorities and privileges necessary for controlling and managing waterworks or other public utilities (sections 41);

- governing the number, election, term, and salary of public utility commissioners (sections 42 to 44);and

- governing books and records to be kept by public utility commissions (sections 46 and 48), and requiring commissions to report annually to municipal councils on fiscal matters (section 47).

Conservation Authorities Act

Administered by the Ministry of Natural Resources, the *Conservation Authorities Act*[106] ("CAA") establishes a statutory framework for the creation, funding and operation of local (or regional) Conservation Authorities ("CAs") within Ontario. The CAA provides that the primary mandate of CAs is to undertake "a program designed to further conservation, restoration, development and management of natural resources" (section 20).

While the CAA does not directly regulate drinking water, it is clear that the Act contains a number of provisions which can directly affect or influence water resources serving as sources of drinking water. These provisions include:

[103] This Act also prohibits wasting, reselling or otherwise obtaining or using water without municipal consent: *Public Utilities Act*, R.S.O. 1990, c.P.52, section 13.
[104] It should be noted that a municipality may pass a by-law dispensing with the need to obtain electoral consent to establishing or abolishing a public utility commission: *Public Utilities Act*, R.S.O. 1990, c.P.52, section 67(1).
[105] If the by-law establishing a public utility commission is repealed, then the commission ceases to exist and control and management of the public utility reverts back to the municipality: *Public Utilities Act*, R.S.O. 1990, c.P.52, section 38(6).
[106] *Conservation Authorities Act*, R.S.O. 1990, c.C.27.

- enabling the establishment of a CA at the request of municipalities within a watershed[107] (sections 2 and 3) or adjoining watersheds (sections 8 to 9);

- permitting a CA to be dissolved (section 13.1);

- specifying procedural requirements respecting municipal representation on the CA (section 14), meetings (sections 15 and 30), voting (section 16), and appointment of officers, employees and executive committees (sections 17 to 19);

- empowering CAs to undertake watershed management programs, acquire or expropriate lands, enter into landowner agreements, construct dams and reservoirs, and undertake flood control or watercourse diversion projects (section 21);

- authorizing CAs to make capital expenditures and apportion costs and expenses among participating municipalities (sections 25 to 27);

- empowering CAs to make regulations which restrict or regulate water use, prohibit or regulate watercourse diversion or channelization projects, and prohibit or regulate development which may affect flood control, erosion, pollution[108] or land conservation (section 28);[109] and

- empowering CAs to make regulations respecting the use of CA lands or facilities (section 29).

Health Promotion and Protection Act

Administered by the Ministry of Health, the purpose of the *Health Promotion and Protection Act*[110] ("HPPA") is to organize and deliver public health programs, prevent the spread of disease, and promote and protect the health of Ontarians (section 2).

The HPPA contains a number of provisions which are directly related to the investigation, reporting, and reduction of waterborne diseases in Ontario. These provisions include:

- creating boards of health for each local health unit (Part VI), and requiring boards of health to undertake specified public health programs and services for local residents (sections 4 and 5);

[107] "Watershed" is defined as "an area drained by a river and its tributaries": *Conservation Authorities Act*, R.S.O. 1990, c.C.27, section 1.
[108] "Pollution" is defined as "any deleterious physical substance or other contaminant that has the potential to be generated by development" within the area prescribed by the CA regulation: *Conservation Authorities Act*, R.S.O. 1990, c.C.27, section 28(25).
[109] A CA's development regulation cannot be approved by the MNR unless the regulation is are restricted to river or stream valleys, hazardous lands, wetlands, or shorelines of the Great Lakes-St.Lawrence River System or inland lakes that may be affected by flooding, erosion, or dynamic beach hazards. In addition, a CA's regulations cannot limit the use of water for domestic or livestock purposes, and cannot interfere with any rights or powers conferred upon municipalities regarding the use of water for municipal purposes: *Conservation Authorities Act,* R.S.O. 1990, c.C.27, subsections 28(5) and (10).
[110] *Health Promotion and Protection Act*, R.S.O. 1990, c.H.7.

- requiring each board of health to hire a full-time medical officer of health (section 62);

- imposing a mandatory duty upon the medical officer of health to carry out inspections for the purposes of preventing, eliminating and decreasing the effects of "health hazards"[111] within the health unit (section 10);

- requiring the medical of officer to investigate complaints of health hazards related to environmental health, and notify other approporiate Ministries of such complaints (section 11);

- requiring the medical officer of health to keep informed on matters related to environmental health (section 12);

- empowering the medical officer of health to issue written orders requiring persons to take (or refrain from) specified actions in relation to a health hazard (section 13);[112]

- requiring owners of residential buildings to provide potable water for residents of the building (section 20);

- imposing a duty upon physicians, health laboratories and other institutions to notify the medical officer of health about "reportable diseases"[113] that they have detected or suspected (sections 25 to 30);

- giving medical officers of health (and public health inspectors) broad rights of entry, investigation, and sampling (section 41);

- empowering the Minister of Health to investigate causes of disease or mortality in Ontario (section 78), and to establish public health laboratories (section 79);

- empowering the Minister of Health to take such action (e.g. issuing orders) as may be necessary to address situations in Ontario that constitute or may constitute a risk to the health of any person (section 86); and
- enabling the passage of regulations on various public health matters, including potable water (section 96(3)).

Persons convicted of offences under the HPPA face small fines and prohibition orders (sections 100 to 102).

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[111] "Health hazard" is defined as including premises, substances, things or liquids that have or are likely to have an adverse effect on the health of any person. "Premises" is further defined as including "water", and "food" is defined as including "drink for human consumption": *Health Promotion and Protection Act*, R.S.O. 1990, c.H.7, section 1(1).

[112] Before issuing such an order, the medical officer must believe, on reasonable and probable grounds, that a health hazard exists and that the requirements specified in the order are necessary to decrease or eliminate the effects of the health hazard: *Health Promotion and Protection Act*, R.S.O. 1990, c.H.7, section 13(2).

[113] Both Campylobacter enteritis and Verotoxin-producing *E. coli* 0157:H7 indicator conditions are reportable diseases: see O.Reg.559/91 (amended to O. Regulation. 129/96)

1.4 History of *Safe Drinking Water Act* Proposals in Ontario

Notwithstanding the above-noted federal, provincial and municipal regimes, several private member's bills have been introduced in the Ontario Legislature since the early 1980s to enact a *Safe Drinking Water Act*.[114] Ultimately, none of these bills were passed into law, although the most current attempt to enact a *Safe Drinking Water Act* (Bill 96) received Second Reading and was referred to the Committee of the Whole House.[115] However, Bill 96 was not enacted to date.

In general, these private member's bills are virtually identical in scope and content. For example, the various bills from the 1980s proposed to establish a regulatory regime that:

- applied primarily to public water suppliers (e.g. 15 or more service connections serving 25 or more people);

- contained a broad statement of purpose (e.g. protection and enhancement of drinking water quality in Ontario);

- imposed various testing, reporting, and record-keeping duties upon public water suppliers;

- required immediate remedial measures and/or provision of alternate water supplies if adverse test results were obtained;

- established public participation opportunities in setting or amending regulations relating to contaminants or substances in drinking water;

- prohibited supplying consumers with drinking water that exceeded prescribed levels or standards;

- prohibited pollution of public or private water systems;

- established fines for contraventions of the Act or regulations;

- created a civil cause of action for damages caused by a contravention of the Act or regulations;
- created a public right to seek judicial review if the Minister of Environment failed to exercise powers or fulfill duties imposed under the Act;

[114] These private member's bills include: Bill 45 (Mr. Charlton, First Reading April 5, 1982); Bill 62 (Mrs. Grier, First Reading November 21, 1985); Bill 62 (Mrs. Grier, April 22, 1986); Bill 99 (Mrs. Grier, First Reading June 24, 1987); Bill 14 (Mrs. Grier, First Reading November 9, 1987); Bill 25 (Mrs. Grier, First Reading May 18, 1989); Bill 96 (Ms. Churley, June 15, 2000).

[115] Bill 96 received Second Reading and was referred to Committee of the Whole House in September 2000: see *Ontario Hansard*, 1st Session, 37th Parliament (September 28, 2000).

- established an independent tribunal to conduct public hearings on proposed regulations relating to drinking water contaminants;

- established a multi-stakeholder advisory committee to provide assistance to the Minister of the Environment on various drinking water matters;

- required the Minister of the Environment to fund research into various drinking water matters (e.g. health effects, water quality and quantity, drinking water treatment, and sources of surface water and groundwater contamination);

- required the Minister of the Environment to cause testing of private water systems if requested by consumers; and

- enabled the passage of regulations on various drinking water matters (e.g. designating contaminants, prescribing maximum permissible contaminant levels, and setting drinking water testing procedure and frequency).

Similarly, Bill 96 (which was introduced in the wake of the Walkerton tragedy) contains most of the foregoing elements, but added or refined the following matters:

- inclusion of a preamble;[116]

- expansive statement of purpose;[117]

- revised definition of "public water supplier";[118]

- duty on public water supplies to immediately take prescribed steps (e.g. notify medical officer of health, warn consumers, undertake remedial measures, and provide alternate water supply) if adverse test results are obtained, tests are delayed or not conducted, or testing or treatment equipment is malfunctioning;[119]

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[116] The Bill 96 preamble, *inter alia*, states that "the people of Ontario have the right to clean and safe drinking water", and that "clean, safe drinking water is a basic human entitlement and essential for the protection of public health".

[117] Section 1 of Bill 96 states that:

> 1. The purposes of this Act are,
> (a) to recognize that people who use public water systems in Ontario have a right to receive clean and safe drinking water;
> (b) to restore public confidence in the quality of drinking throughout Ontario;
> (c) to protect and enhance the quality of drinking water in Ontario.
> 2. In order to fulfill the purposes set out in subsection (1), this Act provides,
> (a) means for reviewing decisions about drinking water quality made by the Government of Ontario and holding it accountable for those decisions; and
> (b) increased access to the courts for the protection of drinking water quality.

[118] Section 2 of Bill 96 defines a public water system as a "system for the collection, supply and distribution of drinking water" to more than five private residences.

[119] See section 3 of Bill 96.

- accreditation of water testing laboratories, and clarification of laboratories' reporting obligations;[120]

- duty on the Ministry of the Environment to establish an electronic water quality database;[121]

- enhanced penalties (e.g. $1 million fines, restraining orders) for contraventions under the Act;[122]

- duty on the Minister of the Environment to table annual reports on the state of drinking water in Ontario;[123]

- inclusion of a paramountcy clause;[124] and

- creation of a "Safe Drinking Water Fund" to provide technical and financial assistance to public water suppliers on various matters (e.g. improving delivery systems, providing employee training, and protecting sources of drinking water).[125]

Since none of these private members' bills have been enacted to date, few (if any) of the foregoing provisions have been entrenched on a statutory basis in Ontario. However, some of the provisions are reflected in Ontario's new Drinking Water Protection Regulation (O.Reg. 459/00) as well as other components of Ontario's much-publicized "Operation Clean Water" program.[126] Given these recent initiatives, the remainder of this Paper focuses on whether -- or to what extent -- legislative reform may still be necessary or desirable in Ontario.

Accordingly, Part II of this Paper describes statutory drinking water regimes in other selected jurisdictions, and provides a comparative analysis of these various regimes. In light of this comparative analysis, Part III of this Paper critically evaluates Ontario's current drinking water regime, and identifies various gaps, weaknesses and shortcomings in the current provincial regime. Part III also describes opportunities for legislative reform, and provides a number of recommendations intended to strengthen the protection of drinking water (and its sources) in Ontario.

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[120] See sections 4 and 5 of Bill 96.
[121] See section 6 of Bill 96.
[122] See sections 7 and 8 of Bill 96.
[123] See section 15 of Bill 96.
[124] Section 17 of Bill 96 provides that "in the event of conflict between any provision of this Act or the regulations made under it, and a provision of any other Act or regulation, this Act and the regulations made under it shall prevail".
[125] See section 19 of Bill 96.
[126] The stated objectives of Operation Clean Water are: "tough, clear standards with the full force of the law; effective inspection and enforcement; tough penalties for non-compliance; and strategic investments and efficient delivery practices". It is claimed that these objectives will be achieved through various initiatives, such as conducting an inspection "blitz" of municipal water works, reviewing Certificates of Approval for municipal water works, and posting adverse water quality incident reports on the Ministry's website: see Ministry of the Environment, *Operation Clean Water: A Progress Report* (September 2000): <http://www.ene.gov.on.ca/opclean>.

PART II – SAFE DRINKING WATER LEGISLATION IN OTHER JURISDICTIONS: DESCRIPTION AND IMPLEMENTATION

2.1 Introduction

This section provides overview information on jurisdictions other than Ontario and discusses how they handle the quest for safe drinking water. There is evidence that the U.S. *Safe Drinking Water Act* has been effective in reducing the outbreaks of waterborne disease. It is our observation, however, that most legislation and regulation is reactive, rather than innovative. Usually legislation or regulations are introduced or strengthened after there have been disease outbreaks caused by drinking water. Within the last year, since the tragedy at Walkerton almost every province in Canada has tightened its drinking water regime. Similarly, in New Jersey where some of the strongest provisions have been enacted, communities suffered diseases such as cancer and even mercury poisoning from contaminated drinking water. These misfortunes triggered more protective legislation at the state level and at the federal level.

The comparative analysis in this section is not always consistent for every jurisdiction as the emphasis is on innovative initiatives worthy of consideration in a new and improved Ontario regime. This has involved a "pick and choose" approach along with a contextual analysis of the particular jurisdictions. Generally, information on the following list of topics was sought. The topics reflect issues identified by CELA during its long history of dealing with water issues, as well as specific observations related to Walkerton. However, given the wide range of jurisdictions and sources of information, as well as prevailing conditions, information on all of these topics was not always obtained.

The topics include:

a. Accountability: Is there one ministry responsible? What is the accountability structure, and is it easily ascertainable? Is responsibility fragmented or is the Health or Environment minister in overall control?

b. Statement of purpose / statement of rights: Is there a statement of purpose in the applicable legislation so that consistent direction is provided when interpreting individual provisions?

c. Applicability of the Legislation: How comprehensive is the legislation? Does it apply to private wells, bottled water, the whole country or province?

d. Does the legislation apply to the Crown?

e. Setting contaminant standards and regulations: What is the standard-setting process? Is there periodic review of standards? How are new pathogens identified? Are standards set through regulations or guidelines? Are vulnerable populations specifically considered?

f. Approvals, licensing, and accreditation: Licensing of water works, operators and testing facilities. Are public or private labs used? If a combination, which functions do each perform?

g. Operational duties: testing, treatment, notification, and corrective action. Are all water sources required to be treated and tested? Who is required to monitor and what are the testing requirements? Are there notification requirements when test results show contamination or results above standards? Is there a duty to act, and when is it activated?

h. Source water assessment and protection: Are there provisions for watershed protection, including watershed assessments? What level of government is responsible (provincial, municipal)? Are there requirements for wellhead protection?

i. Community right to know: Is there a specified course of action for things like boil water orders, results of sampling, and irregular operational events? When must the community be notified, and how? Are vulnerable populations identified and specially considered for notification purposes?

j. Provincial monitoring and reporting: Is there an annual report or audit requirement? What is the frequency of reporting?

k. Investigation and enforcement: Is there provision for citizen suits? Are government decisions subject to judicial review? Are there mandatory funding requirements?

l. Prohibitions and penalties: What types of prohibitions and penalties are included in the legislation and regulations?

m. Funding, research and technical assistance: Are there ongoing requirements for research, and are there special mechanisms for funding such research? Are small water systems given special assistance? Are there funding obligations for treatment systems? Are any types of funding requirements entrenched in law? Are small systems / communities given priority?

n. Advisory mechanisms: Does government utilise private sector and academic expertise through advisory committees or other advisory mechanisms, and are they required by law or merely allowed if government wishes to utilise such arrangements?

2.2 Other Canadian Provinces (British Columbia, Alberta, Québec, New Brunswick)

(a) British Columbia

British Columbia has an extremely complex framework for water with numerous statutes, regulations and guidelines coming into play. Several ministries share responsibility for monitoring and enforcement. The threats to the province's drinking water sources come from the resource-based industries and their polluting activities – toxic effluents from pulp and paper

mills, acid mine drainage, extensive livestock operations and erosion, landslide and road building from the forest industry.[127]

B.C. has the highest per capita incidence of waterborne and food-borne disease of any province in Canada, according to the B.C. Auditor-General's 1999 report "Protecting Drinking Water Sources".[128] Toxoplasmosis, *Cryptosporidium*, and *Giardia* have been the well-documented culprits in several outbreaks. Since 1985 there have been 18 confirmed outbreaks of waterborne disease in B.C., and in February 2000 there were 240 boil water advisories in effect in the province.[129] In 1996 there were more than 12,000 cases of waterborne illness caused by *Cryptosporidium* associated with human activities and livestock. In April, 2001, there were over 200 boil water advisories in British Columbia.[130]

After a number of outbreaks in the 1980s, concern over drinking water quality in British Columbia was high, and legislation was passed to address the problems -- the *Health Act*[131] and the Safe Drinking Water Regulations under this Act. This Act is administered by the Ministry of Health, which has the primary responsibility for safeguarding drinking water in British Columbia.

The most vulnerable communities are those that depend on small water systems where there is a lack of resources for protecting the sources, and for influencing development approvals. In the wake of Walkerton British Columbia is stepping up its enforcement of its 1992 Agricultural Waste Control Regulations under the *Waste Management Act*. This is the only law that addresses agriculture in the province. There are no regulations in British Columbia that protect groundwater.

These agricultural waste control regulations are intended to control farming practices that contaminate ground and surface water. The concern is for nitrates, particularly in the lower Fraser Valley where the aquifer is unconfined. That is, there is no protective layer over the seven major aquifers that provide drinking water, and water soluble nitrates from animal manure are easily carried into the groundwater. The government is inspecting farms throughout the Fraser Valley to ensure that during the winter, farmers are covering manure piles and are not spreading manure on land. Nitrates are of concern because they are linked to SIDS (sudden infant death syndrome) and are suspected carcinogens.

The 1999 B.C. Auditor-General's Report made 26 recommendations. In March 2000 a report was presented to the Standing Committee on Public Accounts outlining actions being taken in

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[127] West Coast Environmental Law Association, *Safe to Drink.* Vancouver, BC: June 2000
[128] Office of the Auditor General of B.C. 1998/1999: Report 5, April 1999 at p.2 of 12: http://www.oag.bc.ca/pubs/1998-99/report-5/sec-1.html.
[129] British Columbia Ministry of Health, Health File #49a, February 2000: <http://www.hlth.gov.bc.ca/hlthfile/hfile49a.html >.
[130] Dirk Meissner, "*B.C.'s new act designed to avoid Walkerton Tragedy*", Canadian Press, April 6, 2001, <http://allpop.com/Health0104/06_water-cp.html>, accessed April 10, 2001
[131] *Health Act*, R.S.B.C. 1996, c. 179.

response to the recommendations.[132] The report categorized its initiatives into four main topics, and the ministries or agencies responsible for each. These were:

- source water protection (11 responsible agencies)

- water treatment (4 responsible agencies)

- distribution system (4 responsible agencies)

- monitoring/evaluation (2 responsible agencies).[133]

The report recognized that source water protection is complex because differing land tenure and land uses involve several agencies and interests, and that although delivery of safe water is the responsibility of the water purveyor, a degraded source water supply often increases the outlay of treatment expenditures. The province is trying to build an information base for better management of groundwater through the mapping of aquifers and monitoring of groundwater quality and quantity. Consideration is also being given to developing groundwater protection legislation.[134]

The Auditor-General noted that responsibility for drinking water was shared by many different ministries in British Columbia, and recommended that there be "one voice" speaking for drinking water in the province.

Another major issue recognized by the Auditor-General is the vulnerability of small water systems. Approximately 500,000 people, or one-seventh of B.C.'s population, get their drinking water from small systems. Sixty percent of them use surface water and the rest use groundwater.[135]

This report has led the government to introduce a proposed Drinking Water Protection Plan that was discussed throughout the province at public meetings. The main points of discussion in the plan are proposals to: assess water sources to identify threats to drinking water; make assessments and monitoring reports public; set province-wide standards for drinking water and for frequency of monitoring; and to require training and certification for operators.

Environmentalists are critical of the Plan for not recommending a single drinking water agency, one of the primary recommendations of the Auditor-General's report.

As a result of these consultations, the B.C. government recently enacted the *Drinking Water Protection Act* in April, 2001[136], making B.C. the first province to enact a statute dedicated to drinking water. The *Drinking Water Protection Act* is organized into six main parts:

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[132] British Columbia Ministry of Environment, Lands & Parks, "Provincial Government Actions to protect Drinking-water Sources" (March 8, 2000): http://www.elp.gov.bc.ca/wat/wq/dw/march2000pac.html.
[133] Ibid, p.2.
[134] Ibid, p3-7.
[135] See footnote 2 (Auditor General's Report), Ch. 5, p.1, of 7.
[136] Bill 20, *Drinking Water Protection Act*, 5th Session, 36th Parliament (assented to April 11, 2001, S.B.C. 2001, c. 9) < http://www.legis.gov.bc.ca/2001/3rd_read/gov20-3.htm >

- Part 1: creation of drinking water officers, provincial drinking water coordinators, and drinking water advisory committees;

- Part 2: protection of drinking water supply through treatment, monitoring, training, notification, and emergency response requirements;

- Part 3: development of water source and system assessments and response plans;

- Part 4: creation of various prohibitions, penalties and administrative orders to protect drinking water;

- Part 5: development of drinking water protection plans for prescribed areas; and

- Part 6: creation of investigation and enforcement powers, and consequential amendments to other provincial water laws."

The Act is noteworthy for its focus on the relationship between source water quality and drinking water quality. It is hoped that the Act will address the many source water protection problems highlighted in the B.C. Auditor General's report that were responsible for B.C. having an unacceptably high pathogen incidence. According to one commentator, the Act has made B.C. "world leaders in preventative action" through its focus on source protection. However, the legislation is brand new, and is only a framework, so it will require time to see how it will be implemented.

Commentary:

With the new *Drinking Water Protection Act*, British Columbia has moved to the forefront among provinces in terms of establishing a strong commitment to safe drinking water, particularly regarding source water protection and accountability. The *Water Act* of 1909, administered by the Ministry of Environment, Lands and Parks, licenses water-related activities. And in 1995, British Columbia has passed the *Water Protection Act*, which confirms that British Columbia owns its water. This legislation prohibits large-scale diversions. But until the *Drinking Water Protection Act*, there has been no single Act or Agency that governs and protects drinking water in B.C.

In the past, one of the strengths of the B.C. system has the strong role played by the Ministry of Health. B.C. commentators believe action is quicker because health officials, as opposed to environment officials, have appropriate expertise to deal with drinking water problems. Even in the new Act, both health and environment ministers are to appoint “provincial drinking water coordinators”, who are required to jointly establish guidelines and directives to be considered by officials acting under the legislation, so a strong health role will be maintained.

The new Act also goes a long way towards addressing former serious gaps in British Columbia’s legislative framework: there are now qualification standards for operators, there is a

strengthened system of permits for the construction and operation of water supply systems, and significant new source water assessment and drinking water protection plan provisions.
Vulnerable populations are given consideration in that the Ministry of Health advises anyone who is immuno-compromised to boil drinking water[137] – as does the American Water Works Association. Disinfection is mandatory in British Columbia, although even this measure is controversial. One community, Erickson, was recently taken over by the Ministry of Municipal Affairs because it refused to chlorinate its drinking water.

The history of the struggle in British Columbia to protect drinking water has been carried out largely on a community by community basis. The Ministry of Environment, Lands and Parks plays a role in the protection of watersheds, a necessity to protect drinking water; but it must also balance the interests of the Ministry of Forests that administers the *Forest Practices Code Act*.
The problems in British Columbia mostly arise from the tension between communities and the logging ambitions of the forest industry. Much of the accessible old growth forest is gone, and now forest companies are looking at the watershed areas that have traditionally been off-bounds for them. Because the watershed areas are near communities, they are also near the mills and, therefore, attractive targets for the forest industry. The lower Fraser Valley is more agricultural and more prone to the problems afflicting communities like Walkerton.[138]

Together, Victoria and Vancouver account for 61 per cent of the population of British Columbia, and both these cities now have watershed protection in place. Victoria is a good example of successful community control. The Capital Regional District government encompassing Victoria owns the land within the catchment basin and watershed area from which it obtains its drinking water. The area is 87 square kilometres and is 90 per cent owned and controlled by the Water Department. Activities in this watershed area are very restricted. People are not allowed into the watershed area and fencing keeps cattle out. An Advisory Committee has been set up to provide advice on water supply, water quality and the stewardship of the watershed lands.[139]

Under the provincial *Land Act*[140], four other communities including Vancouver, Enderby, Fernie, and Vernon have obtained long term leases from the province for their water supply lands.[141]
The Greater Vancouver Water District was formed in 1926 when a 999-year lease was granted by the province for the watershed lands under the *Land Act*. By 1936, mining and logging operations were halted and the Water District adopted a closed watershed policy.
In the 1960s, Vancouver jeopardized the integrity of its drinking water by allowing logging within the watershed area. This was done through an amendment in 1965 that turned the watershed area into a tree farm by allowing wood to be extracted. Logging leads to road building and sedimentation in the drinking water and the need for more chlorination to clean the

[137]British Columbia Ministry of Health, Health File #56, February 2000:
< http://www.hlth.gov.bc.ca/hlthfile/hfile56.pdf >
[138] For British Columbia, comments on the existing situation were obtained from Les Swain, Acting Manager of Water Quality, Ministry of Environment (250 387-9500), Bev Anderson, Ministry of Environment (604 582-5340), Ivan Bulic of SPEC (604 736-7732), Karen Rothe, Watershed Planner, Habitat Branch, Ministry of Environment, Lands and Parks (250-387-9556), and Will Koop, SPEC, Vancouver (604-224-4717) and wkoop@alternatives.com.
[139] B.C. Capital Regional District Water Department < http://www.crd.bc.ca/water >, accessed March 15, 2001.
[140] *Land Act,* R.S.B.C. 1996, c. 245.
[141] West Coast Environmental Law Association and B.C. Environmental Network, Steven Shrybman. *Safe to Drink* (June 2000), < http://www.wcel.org/wcelpub/2000/13148.pdf >, accessed November, 2000."'

drinking water. After a long campaign by the Society Promoting Environmental Conservation (SPEC), a Vancouver-based environment group, the tree farm licence has been revoked and the watershed area is once again being protected as a drinking water source.[142] SPEC and other B.C. environmental groups would like to see every community watershed area set aside as an exclusive reserve used only for drinking water. In 1980, a provincial Task Force created Community Watersheds, designating any community where a water licence was held for drinking water and whose watershed area was more than 50 per cent Crown land. The government planned to develop guidelines to protect community watersheds from logging, agriculture and other threats to the drinking water supplies. When the Forest Practices Code came into effect in 1995, however, these designated areas were incorporated into that legislation.

At that time about 400 communities were designated as community watersheds. Other communities have since applied for this designation. However, the degree of protection available to these communities under the *Act* is very limited. It means the forest companies, before they receive their licences to cut trees, must enter into an agreement with the communities to protect the watershed. Logging companies are generally required to respect water supplies by leaving buffer zones, restricting clearcutting, and maintaining water quality by meeting the Ministry of Environment, Lands and Parks' water quality objectives. However, these are not across-the-board objectives, but vary according to the community.

(b) Alberta

In 1993 Alberta consolidated and updated its environmental legislation into one broad statute – the *Environmental Protection and Enhancement Act*, administered by Alberta Environment[143]. These legislative changes were not sparked by any major incident but by the desire to deal more holistically with environmental legislation and put into place common legal tools for the various types of approvals and contraventions.

The Act's purpose is "to support and promote the protection, enhancement and wise use of the environment", while recognizing ten principles including "the need for Government leadership in areas of environmental research, technology and protection standards", and " opportunities made available through this Act for citizens to provide advice on decisions affecting the environment (s.2 (e),(g)). The Crown is bound by the Act except where the Act specifically provides to the contrary (s.3).

Although the Act is not a *Safe Drinking Water Act*, it does address responsibility issues through the establishment of a Sustainable Development Co-ordinating Council. This Council, to consist of Deputy Ministers from a large number of other departments, including health and municipal affairs, the chairs of Energy Resources and Natural Resources Conservation Boards and the Chief Executive Officer of the Alberta Science, Research and Technology Authority, reports to the Minister designated by the Act (s.5-11). The Act also specifically recognizes the "integral relationship between human health and the environment" and requires the Minister to "co-

[142]For more information on the Greater Vancouver Regional District watershed lands, see <http://www.gvrd.bc.ca/services/water/sheds/default.html > accessed March 15, 2001. For the SPEC campaign, see http://www.spec.bc.ca/campaigns/water/BriefFeb20-2001.htm accessed February 27, 2001.

[143] *Environmental Protection and Enhancement Act*, S.A. 1992, c. E-13.3.

operate with and assist the Minister of Health in promoting human health through environmental protection" (s.11).

The Minister may enter into agreements with landowners to restrict uses of a particular piece of land, and may also enter into conservation easements (s.22). An environmental protection and enhancement fund is established under the Act, and a separate accounting record of the fund is to be kept by the Provincial Treasurer (s.28).

Potable water is dealt with as a separate subject in Part 7 of the Act. It defines "disinfection" and "person responsible for a waterworks system" (s.40). It allows for an environmental protection order to be issued even if an approval holder is complying with the terms and conditions of its approval where the Director believes that the waterworks may cause potable water to be unfit for any of its intended uses or cause the concentration of a substance to vary from the specified concentration for that substance as set out in any applicable approval or regulation (s.143(1)). Emergency measures are provided for, and the Minister may (but is not required to) make regulations (s.145, 146).

The Minister is to report annually on the state of the Alberta environment (s.15). An innovative public involvement provision allows any 2 residents of Alberta over 18 years of age to apply to the Director to investigate an alleged offence. The applicants must make a solemn declaration related to the alleged offence, but once that is done the Director is required to investigate and report to the applicants. The Director may discontinue the investigation but if so, he or she must prepare a statement stating the reasons for the decision and supply it to both the applicants and the person whose conduct was investigated (s.186-187).

In terms of enforcement, enforcement orders are specifically allowed to impose requirements that are more stringent than applicable requirements in the regulations "in order to effect compliance with this Act" (s.200 (2)).

Under the civil remedies provisions, costs incurred by the Director, where there has been failure to comply with an enforcement order or an environmental protection order, or where the Director was required to take emergency measures, constitute a charge in favour of the government enforceable in the same way as a mortgage or other security and ranks above any other charge against land (s.205). The Act also provides that a judge can, in certain circumstances, extend the limitation period for actions involving the release of a substance into the environment (s.206). A person harmed as a result of an offence for which a conviction was obtained under the Act may sue for an amount equal to the loss or damage that can be proved and a person can apply for an injunction to stop conduct that is contrary to the Act and is causing or will cause damage (s. 207 and 213).

The main regulation dealing with drinking water, the Potable Water Regulation[144], came into effect at the same time as the Act. It requires, generally, that waterworks systems "be designed, operated and maintained to achieve under all normal and foreseeable operating conditions all water quality requirements as specified in this Regulation or an approval" (s.3). Under the regulation, all water suppliers must meet the latest requirements of the Canadian Drinking Water

[144] Alta. Reg. 122/93 (Consolidated up to 214/96).

Quality Guidelines (s.6 (1) (a)). This means that they cannot exceed the maximum concentration levels of the parameters listed in the guidelines. Suppliers must test regularly for bacteria as the guidelines require.

The main document that describes how water must be protected for individual systems is the approval document which is drawn up for every water supplier in the province. This is a legally binding approval which lasts for up to 10 years – a kind of mini-regulation. For example, Edmonton and Calgary would have their own municipal approvals tailored to their site-specific circumstances. [145] The approvals are used by Alberta Environment to regulate performance standards and contaminant levels. All standards and all monitoring requirements are spelled out in the specific approvals. The frequency of sampling for chemicals varies depending on the drinking water system.

If the Canadian Drinking Water Guidelines change, then the levels prescribed in the approvals will be changed either by changing all the approvals in the province if it is a health-related parameter, or by updating the approval when it is renewed. The Director of Alberta Environment may include in the approval more stringent requirements than those set out in the Potable Water Regulation.

Alberta also has Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems that are referenced in the Potable Water Regulation. These came into effect in 1997. The Potable Water Regulation requires operators to meet the requirements for standards and design set out in this document [146].

The water suppliers must take samples and report on the results to Alberta Environment. All bacteriological monitoring is done at government labs. If there is a non-compliant result, it is reported to the owner of the water works and to the ministries of Environment and Health. Chemical monitoring, however, is done at private labs, and Alberta is in the midst of setting up more stringent requirements for the approval of these labs. Alberta Environment itself does surveys and testing to determine generally if water quality is deteriorating or improving. Certification of the day-to-day operators of municipal water systems is mandatory.[147] The operating approval for each facility specifies the certified operator requirements.

Edmonton's water supply is managed by an arm's length corporation called Epcor, wholly owned by the City of Edmonton. There are about 260 groundwater and 240 surface water supplies, mostly publicly owned. The most vulnerable systems are individually-owned wells that are not covered by approvals.

Commentary

From both a public interest perspective and the government's point of view, the system for protecting and monitoring drinking water in Alberta appears to be working well. Nevertheless,

[145] Main sources of information for Alberta were Cindy Chiasson, a lawyer with the Environmental Law Centre in Edmonton (780-424-5099), and Pat Lang, head of Municipal Program Development at Alberta Environment (780-427-8120).
[146] Ibid, s. 7.
[147] Alta. Reg. 122/93, s. 16-17.

the February 2001 Throne Speech committed $260 million over three years to improve water systems and municipal infrastructure.[148]

Most of the concern for drinking water quality is focussed on southern Alberta where farmers raise more than 1 million head of livestock. Cattle, hogs and chickens from these factory farms produce manure that is the equivalent of the sewage from a city like New York. Although there has not been a specific disease outbreak related to drinking water, health officials have found high levels of nitrate and disease-causing bacteria in surface water used for drinking.

The area 200 miles south of Calgary, has the highest rate of intestinal illness in Alberta, and a number of boil water orders have been issued for several towns whose water treatment plants were not removing *Giardia* and *Cryptosporidium*.[149] In 1997, a surface water study was done as a result of a Canada-Alberta Environmentally Sustainable Agricultural Agreement. *Giardia*, *Cryptosporidium*, and some fecal coliform emerged as problems in surface waters and shallow groundwater systems. There are no regulations, only guidelines requiring animal waste to be managed to prevent bacteria from seeping into water systems. One group, Trout Unlimited, have a program called "Cows and Fish" to persuade farmers to keep cattle away from creeks.[150]

The Alberta Auditor General's 1998-99 report made recommendations about enhancing the systems that support the approval process, specifically issues of management information and data completeness. Although some of the emphasis was on efficiencies, it also pointed out that data entry of monitoring reports received from industry is backlogged. Routine monitoring reports are used for compliance purposes, and then are entered into the database. The Auditor's view was that the reports "provide an early warning system for potential problems and are critical to ensure that the Department is aware of any issues of concern." [151]

If Alberta has a major weakness, it is in the protection of watershed areas. There is little to no protection of these areas, although it is arguable that agreements with landowners, contemplated under the *Environmental Protection and Enhancement Act*, could be used for this purpose. Currently, protection is essentially limited to taking watershed considerations into account when drafting an approval for an industry discharging into a river used for drinking water.

There is no public reporting of drinking water monitoring, although it is possible to get this information. Alberta Environment, under the *Environmental Protection and Enhancement Act*, allows anyone to see a certificate of approval and any monitoring done for that approval. There are no requirements, however, for water suppliers to report this information directly to the public.

[148] http://www2.gov.ab.ca/thronespeech2001/, p.10.
[149] London Free Press, March 7, 1998
[150] "Assessing Alberta's water quality", < http://www.agric.gov.ab.ca/sustain/water/wq10.html >, accessed October 19, 2000
[151] Annual Report of the Auditor General of Alberta, 1997-98, < http://www.oag.ab.ca/html/ar1997-98 >, p. 160.

(c) Québec

Unlike British Columbia where responsibility for drinking water is primarily entrusted to the Ministry of Health, Division 5 of the *Environmental Quality Act*[152] clearly gives the Québec Minister of the Environment power over water and sewer systems, waste water treatment and water supply intakes.

Under the *Environmental Quality Act*, Québec has enacted the Drinking Water Regulation which requires drinking water service managers to analyze the water they distribute, to inform the government of their analyses on a regular basis, to report all cases of contamination, and to take the steps required to comply with regulatory standards.

This regulation was passed in 1984. It adopted the Canadian Drinking Water Guidelines current at that time. This meant that only 46 drinking water parameters were regulated, and they have not been revised since 1984. Sampling was compulsory.

Groups like Eau Secours have been lobbying the Minister of the Environment to update the legislation and make it more protective. On July 12, 2000, the Minister of the Environment, anxious to tighten up Québec's drinking water regime to avoid the tragic consequences of Walkerton, put out a draft regulation for public discussion.[153] The announcement of a final regulation is expected soon.

The proposed regulation would incorporate standards for parameters based on Health Canada's most recent Canadian Drinking Water Guidelines. There would be statutory limits on turbidity and trihalomethanes. In addition, the new regulation would require much more comprehensive and frequent sampling by every municipality and private system, including water delivered by tank truck. It also covers tourist areas like parks and trailer camps. (s. 8-12, s. 15-19, s. 25-28)

Under the new proposal compulsory testing for total coliforms must be done at least 8 times per month (up from twice a month) for small systems serving 8,000 people or less. Water suppliers must do one additional test per month for every 1,000 people above 8,000. Forty-two organics and 17 inorganics will be regulated and they must be sampled twice a year. (s. 8-10)

Québec has chosen to use the stricter American standards for turbidity (less than 5 NTUs) and for trihalomethanes (80 micrograms per litre), rather than the Canadian guidelines. All sampling must be done at laboratories accredited by the Minister of the Environment. (Schedule s. 3, 6)

The most far-reaching provision of the proposed regulation is the requirement for well water testing. Most drinking water legislation, even comprehensive drinking water legislation like the U.S. *Safe Drinking Water Act*, does not cover individual wells. In Québec, people drawing water from their own wells would be required to sample for coliforms twice a year and for nitrates once a year.

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[152] *Environmental Quality Act*, R.S.Q. c. Q-2.

[153] The contact person regarding the draft regulation was Mr. Jean-Maurice Latulippe, Ministère de l'Environnement, Direction des politiques du secteur municipal (418-521-3885 or Jean-Maurice.Latulippe@mef.gouv.qc.ca).

Currently in Québec there is no compulsory treatment for drinking water. Thousands of small systems do not have any water treatment at all. If the proposed regulation is adopted, disinfection of all surface water and all ground water affected by surface water that goes through a distribution system would become compulsory. Groundwater would also have to be disinfected if testing showed signs of microbiological contamination. Québec does not dictate what type of disinfection is required because there are a number of different treatments used in Québec. Ozonation is used to treat the drinking water of about 2 million people, and Québec is the first jurisdiction in North America to treat water with biological carbon. (s. 4-6)

Filtration of surface water and groundwater systems influenced by surface water would also be required if there is evidence of drinking water contamination. Québec is following the U.S. Surface Water Filtration Rule and allowing for possible waivers of the filtration requirement where the raw water is of good quality. Strict criteria would be applied, however.

Certification of water system operators would be compulsory. Right now in Québec there is no requirement for certification.

The proposed regulation sets out notification requirements: the testing laboratories must immediately inform the water supplier, the Ministry of the Environment, and the regional public health director if they find a sample that violates the standards. The water supplier, as soon as he or she is informed, must notify the Ministry of the Environment and the regional public health director of the action that has been taken to correct the problem and to protect people drinking the water. If E.coli is detected, the water supplier must notify users through the media and send individual notices indicating that they should boil their water for at least one minute. If E. coli is found in the water used by a school, hospital or similar institution, the water supplier must alert the head of the institution who must post notices. The fines for supplying water that does not meet the standards or for submitting false or inaccurate data may be as high as $40,000. (s. 20-21)

There is no provision for public reporting on drinking water supplies in the old or new Québec regime.

As far as watershed protection goes, the United States has gone farther than any other jurisdiction in mandating assessments of the sources of drinking water. For Québec this is not as relevant. Most of the province's water treatment plants draw water from the St. Lawrence River and their ability to control upstream pollution sources is limited. The Ministry of the Environment is starting to regulate the major industries, starting with pulp and paper mills, then the petroleum and aluminum industries. The goal is to improve source water quality by limiting discharges from these plants.

In Québec, sources of drinking water can be protected through municipal initiatives. For example, municipalities that draw their drinking water from lakes have the authority to regulate activities around their drinking water sources.

Québec, like Ontario, has been cutting back on inspections and enforcement of environmental regulations in the last few years, but the Minister's statements seem to promise that the province

would assist municipalities by paying for half the cost of new infrastructure necessary to meet the regulation.

Commentary

Québec is generally well-regarded with respect to drinking water management, but its legislation is not as comprehensive as Alberta's and is currently lagging behind Ontario since Ontario passed its new regulation. It does not have many of the important provisions of the U.S. *Safe Drinking Water Act*, such as public right to know and source water assessment requirements.

Québec has not had many outbreaks of waterborne disease so it has been slow to improve drinking water legislation. However, there was a great deal of concern in Québec after Walkerton and fear that the same sort of tragedy could happen there. A new regulation to update the drinking water legislation has been pursued since July 2000, and if this regulation is adopted as proposed, it would put Québec alongside Ontario and Alberta in having a more comprehensive drinking water regime than most other provinces. [154]

Large municipalities like Montréal have enjoyed generally good quality drinking water, but nitrate pollution from agriculture is a problem in the countryside. Like Alberta, Québec is the new home of large factory farms. In January 2001, the citizens of Kamouraska revealed the results of well testing in their area. They found levels of nitrates between 3 and 7 milligrams per litre in 20 residential wells. Even though the Canadian standard is 10 mg/l, they are angry at the Minister of the Environment for giving approval in 1999 to the establishment of a "méga-porcherie", or industrial pork farm, which they fear will raise the levels of nitrate even higher.[155]

(d) New Brunswick

Although New Brunswick's drinking water regime is not as rigorous and comprehensive as some of the larger provinces, New Brunswick has taken more initiative in passing legislation with the goal of protecting its drinking water sources. It has targetted regulations specifically at the protection of watershed and wellfield areas. Even the United States has only recently mandated drinking water source assessments and is still limited to voluntary programs for wellhead protection.

New Brunswick has a unique regime for protecting its water supply, including three major components. The primary instruments for this protection are the 1993/94 Potable Water Regulation[156] under their *Clean Water Act*, the 1990 Watercourse Setback Designation Order[157], and the more recent 1999 Wellfield Protected Area Designation Regulation.[158]

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[154] For Québec, the main contacts were Simon Théberge, Drinking Water Co-Ordinator, Québec Ministry of the Environment (418-521-3885) and Andre Bouthillier, Eau Secours. For Eau Secours, see also <http://www.eausecours.org/entrée_generale_eal_tres_bonne_qualite_presse28janv.htm> and <http://www.eausecours.org/entrée_generale/dossiers/revue_de_presse/eau_potable/rumeur_au >

[155] Louis-Gilles Francoeur, "Kamouraska: des nitrates dans l'eau potable", Le Devoir, January 31, 2001.

[156] Regulation 93-203 (O.C. 93-979).

[157] New Brunswick Regulation 90-136 under the Clean Water Act (O.C. 90-887).

[158] New Brunswick Regulation 2000-47 under the Clean Water Act (O.C. 2000-451).

The Potable Water Regulation applies to surface water, ground water and domestic wells. The responsibility for it is shared by the Department of Health and Wellness and the Department of Environment and Local Government. The Auditor General in his report for the year 2000 criticized the lack of clarity in this shared responsibility and its implications for drinking water problems.[159]

Concerned that there might be risks similar to Walkerton in New Brunswick, he decided to investigate domestic wells which provide water for 40 per cent of the people, those who live in small towns and rural areas. He looked at two regulations, the Potable Water Regulation and the Water Well Regulation[160]. The Water Well Regulation, administered solely by the Department of Environment and Local Government, licenses well contracters, drillers and diggers and sets out safety standards which must be met in creating new wells. It ensures that well contractors will not drill or dig wells near septic systems or landfill sites.

The Potable Water Regulation is the more important regulation for overall drinking water safety. It addresses the monitoring aspect of water. Every new well or community water supply must be tested thoroughly before it can be offered for drinking water. The Department of Environment and Local Government has standard protocols for what must be tested the first time.

Well contractors, diggers, and drillers must sell homeowners water testing "vouchers", entitling them to an analysis for inorganic substances and micro-organisms. It is mandatory to have wells tested within 12 months of their construction. These tests are done by the Department of Environment's lab.

All monitoring results are then sent by the lab to the Department of Health and Wellness for interpretation. Results are compared to the Canadian Drinking Water Guidelines and the New Brunswick Health Advisory Limits. If there is no problem, the well owner will receive a letter with the results of the tests from the Department of Health. If the water does not meet these guidelines, health officials must get in touch with the owner of the well by registered mail within 3 days.

The Auditor found that homeowners were not always informed that they had paid for drinking water testing and were required to have it done. When it was done, they were often not notified within the 3 day limit when problems were found. He also found that if coliforms were present, only two of five regions directed homeowners to boil their water before using it. [161]

For community water supplies, the Department of Health and Wellness approves a sampling plan. The sampling plan includes the frequency of testing, the list of substances to be tested for, the locations and dates and the name of the testing laboratory.

After the initial monitoring, the ongoing sampling that must be done for public water supplies is decided based on the likelihood of the contaminant being present. For example, bacteria must always be tested for on a regular basis by all communities. Arsenic, on the other hand must be

[159] Office of the Auditor General, 2000 Auditor General's Report, ch. 4, p. 54-56: http://www.gov.nb.ca/oag_bvg/2000.
[160] New Brunswick Regulation 90-79 under the Clean Water Act (O.C. 90-531).
[161] Auditor General's Report, 2000, p. 43.

monitored if it is a threat to a particular community's water supply. If sampling in another community shows no sign of arsenic, it is not regularly required. Every municipality and public water supply has its own individual sampling plan.

The Potable Water Regulation also requires that all sampling of public water supplies must be done by an accredited lab or a lab approved by the Ministry of Health and Wellness.

The Department of Health and Wellness has the legal authority under The *Clean Water Act* to shut down a water supply or to order a water supplier to give notice of a health risk and provide an alternative supply of drinking water. There are, however, no clear provisions for what action will be taken when there are exceedences or when it is necessary to notify the public. This is left to the judgement of the Ministry of Health and Wellness.

The gaps in New Brunswick's laws are the requirements for treatment and training. Right now New Brunswick is looking at possible requirements for certification of water treatment plant perators. The Ministry has training for people in water treatment plants but they are considering t upgrading their requirements as a result of the problems at Walkerton.

There are also no requirements for the treatment of drinking water in any of New Brunswick's legislation, although most plants in New Brunswick treat their water in some way.

Surface Water Protection

The other significant part of its drinking water regime is the protection of surface and groundwater sources. Here New Brunswick has introduced innovative legislation. It has recognized that the best and most inexpensive way to provide safe drinking water is to prevent contamination.

As a first step in surface water protection New Brunswick identified all the watershed areas that supply municipal drinking water in the province.

After identifying the watershed areas, they passed the Watershed Protected Area Designation Order under Section 14 of the *Clean Water Act*. This Section allows the Minister to designate any part of a watershed that provides drinking water as a protected area. The Order now applies to all 30 communities in New Brunswick that take their drinking water from surface waters. This represents about 300,000 people or 40 per cent of the population. The Order has two phases. The first phase began in 1990.

Phase 1 of this order requires every watershed that supplies drinking water to have a 75-metre setback zone. This area is the entire zone within 75 metres back from the banks of most watercourses within the watershed. It creates a buffer between watercourses and potentially harmful activities.

The Watercourse Setback Designation Order defines the setback zones and what can occur within them. By permitting only very restricted activities, it reduces the risk of contaminating the drinking water source. Permitted activities include recreational activities like hunting, fishing, canoe portaging and cross-country skiing, rebuilding or renovating existing buildings,

tree-planting, and using existing beaches and boat launching areas. Existing agricultural activities are strictly controlled.

Activities that are not specifically allowed within the watershed area are considered to be prohibited. For example, someone wishing to build a new cottage on a lake that is used for drinking water cannot build within 75-metre setback zone.[162] There are exemptions for developments and activities that already exist within the setback zone that do not conform to the regulations.

Phase 2, which is expected to be proclaimed in 2001, will extend the protected areas around the designated watersheds. It lays out guidelines for the land area that extends from 75 metres back to the outer limit of the watershed, and restricts activities on the watercourses themselves.

The categories of activities that are considered to pose the greatest risk are forestry, agriculture, road construction, commercial and industrial development, mining, recreation, aquaculture and residential development. Phase 2 regulations restrict these activities. For example, there are restrictions on manure storage and application, clearcuts are limited to 25 hectares, and there can be no discharge of mining effluents. Even boating is restricted in drinking water supply areas. [163]

It is noted in the Sierra Legal Defence Fund's report[164] that Saint John is buying up land in their watershed area. Although this probably minimizes some of the land use conflicts that might arise, all New Brunswick communities using surface water have designation orders and whether the land is publicly owned or private, it has some degree of protection.

Groundwater Protection

The Wellfield Protected Area Designation order has just come into force and will apply to the 54 communities in New Brunswick, or about 300,000 people that use wellfields fed by groundwater for drinking water. Its intention is to protect the recharge area that supplies water to the wellfields.

So far only one community has been designated.[165] The work is going on co-operatively with the other municipalities to get their endorsement. If there is a criticism of this program, it is that it is going too slowly because every municipality has to have its own groundwater assessment and a tailor-made regulation.[166]

The Order creates 3 separate zones around a wellfield or underground drinking water source – zone A, zone B and zone C. It imposes quite severe restrictions on what can be stored or used within the three different zones.

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[162] Watercourse Setback Designation Order, N.B. Reg. 90-136.
[163] New Brunswick Department of the Environment, *Watershed Protection Program Discussion Paper,* November 1998.
[164] Sierra Legal Defence Fund, Waterproof: Canada's Drinking Water Report Card, January 2001.
[165] New Brunswick Department of Environment and Local Government, *Wellfield Protection Program*, July 2000.
[166] The main commentators in New Brunswick were Parker Gray, Senior Policy Advisor, Dept. of Environment and Local Government, New Brunswick (506 453-6708) and David Coon, Conservation Council of New Brunswick.

The potential risk associated with a given chemical can be determined by "groundwater travel time". This is the length of time it takes for substances to travel in groundwater before they are broken down by natural processes. Bacteria, for example, are assumed to have a travel time of 30 days[167] while dry cleaning solvents may take decades to break down. Chemicals that are harmful at low concentrations and highly soluble pose the greatest risk and are, therefore, the most restricted.

Zone A lies closest to the wellhead. It is the most sensitive and has the most restrictions. Septic tanks, manure storage and spreading, sewer lines, petroleum products, chlorinated solvents, pesticides and preservatives are restricted. In Zone A, for example, only 25 litres of heating oil may be stored, so in Fredericton, where 500 of the homes in Zone A use furnace oil, these families will be given a phase-out period, probably around 5 years, to find a different method of heating their homes.

Zone B is farther from the wellhead and surrounds Zone A. Petroleum products, chlorinated solvents and other persistent chemicals are restricted in this zone. Zone C, which surrounds A and B, is farthest from the wellheads, but it is still protected from chlorinated solvents, petroleum products, and fertilizer applications.

Dry cleaning operations cannot go on in any of the three zones because of the threat of perchloroethylene to wells. This means that municipalities will have to move dry cleaners to new, less sensitive locations.

Commentary

The distinctive feature of New Brunswick initiatives is the attempt to protect sources of drinking water, whether ground or surface. The Potable Water Regulation's innovative measures include provision of "vouchers" for water testing to well owners as part of the price of digging or drilling their new wells, and notification if there are problems with water quality.

The basic theory behind New Brunswick's system is that contamination of water sources should be prevented. For surface water, it has identified all watershed areas that supply municipal drinking water in the province and passed the Watershed Protected Area Designation Order under the Clean Water Act. It specifies a 75-metre setback zone from the banks of the watercourse that supplies water and enumerates permitted activities. Phase 2, expected to be proclaimed in 2001, provides guidelines for the area between the 75-metre setback and the outer limit of the watershed.

For groundwater, a Wellfield Protected Area Designation Order applies to wellfields fed by groundwater for drinking water. The intention is to protect recharge areas, but it is a slow process since each municipality must be designated separately with a tailor-made regulation.

New Brunswick appears to be taking a long-term protection of source water approach that accounts for local conditions and individual well owners. Perhaps for this reason it is weak in

[167] Although note that while this 30-day period is a commonplace assumption, according to testimony at the Walkerton Inquiry, bacterial strains such as E.coli 157:H7 can survive for over a year (see Part 1A testimony of Gary Palmateer, October 23, 2000)

terms of treatment requirements and training of treatment plant operators, although it is looking at implementation of certification requirements for treatment plant operators.

2.3 United States Jurisdictions:

(a) The U.S. Safe Drinking Water Act[168]

The US *Safe Drinking Water Act* is the most well established and most comprehensive drinking water legislation today. Everyone working with the Act -- government administrators, environmentalists and water suppliers – support the Act and believe it is a powerful force for the protection of drinking water.

The data collected from the Centers for Disease Control seem to confirm this. They show the number of disease outbreaks related to drinking water has been going down since the introduction of the Act.[169] With the exception of the outbreak in Milwaukee of *Cryptosporidium*, disease outbreaks have been primarily in groundwater systems. Even with the Act, however, the CDC estimates that from 200,000 to 1,300,000 Americans become sick every year from microbes in the drinking water, with 50 to 1200 people dying as a result.[170]

The Environmental Protection Agency's own surveys show that in 1994, 83 per cent of the population was served by community water systems that did not violate health-based standards. By 1998 that figure had increased to 89 per cent of the population. EPA data also shows that violations of standards for inorganic contaminants, trihalomethanes and synthetic chemicals peaked in the 1980s and then declined in the late 1990s.

From its beginnings in 1974 the Act has been amended twice drawing on on-the-ground experience to evolve into a better piece of legislation. The 1996 amendments have taken the Act into new areas and responded to many of the concerns raised by the industry and environmentalists. The success of this additional legislation has not been fully assessed yet but initial reports are cautiously optimistic.

It is also important to understand that the *Safe Drinking Water Act* imposes duties on the Environmental Protection Agency that in turn draws up rules for the states to follow in carrying out the intentions of the Act. In many cases, even though the amendments have been passed, there is a timetable for implementation that continues for several years.

This is a brief history and highlights.

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[168] Commentators for this section included Erik Olson, Senior Attorney, Natural Resources Defense Council, enegin@nrdc.org, 202-289-2405.

[169] Rachel S. Barwick et al, "Surveillance for Waterborne-Disease Outbreaks- United States, 1997-1998*", Morbidity and Mortality Weekly Report,* Vol. 49, No. SS-4, May 26, 2000.

[170] See statement of Erik D. Olson, Sr. Attorney, Natural Resources Defense Council before the Environment and Public Works Committee Subcommittee on Fisheries, Wildlife, and Drinking Water, United States Senate Hearings On Implementation of the Safe Drinking Water Act Amendments of 1996, March 3, 1998.

Safe Drinking Water Act

In 1974 Congress passed the *Safe Drinking Water Act* (SDWA) to protect the public from the risks of contaminated drinking water. This act was to be administered and enforced by the U.S. Environmental Protection Agency (EPA). The EPA's Office of Ground Water and Drinking Water oversees the implementation of the Act today.

The first Act took the significant step of making enforceable previously voluntary drinking water parameters for contaminants. Initially 18 standards were set – 6 organics, 10 inorganics, turbidity, and total coliform bacteria (called the National Interim Primary Drinking Water Regulations). Although turbidity and coliform bacteria are not necessarily a health concern, they may indicate the presence of serious contamination.

Two years later in 1976, radionuclides were regulated, and in 1979 total trihalomethanes, a group of four volatile organic chemicals formed when chlorine is used to disinfect drinking water, were regulated. In 1979 the EPA set non-enforceable guidelines for contaminants that cause aesthetic problems in water, like colour and odour (National Secondary Drinking Water Regulations).

The EPA was also mandated to establish requirements for monitoring the quality of drinking water supplies and ensuring that water systems were properly operated and maintained. Water system operators were required to notify customers whenever they failed to meet one of the standards or when they failed to monitor the drinking water.

In the 1974 Act the EPA was authorized to give states the authority for enforcing the Act if the states met requirements such as adopting drinking water regulations no less stringent than EPA's and if states adopted and implemented procedures to carry out the program. This was called giving the States "primacy".

The United States has embraced the idea of public involvement in drinking water issues since the beginning of the Act in 1974. The original Act created the National Drinking Water Advisory Council. This Council is considered by the EPA to be one of its most valuable vehicles for public involvement. The 15 member Council supports the drinking water program by providing advice and recommendations on drinking water issues. They advise the EPA on proposed regulations, on research and special studies, on drinking water standards and on emerging hazards.

The Council sets up its own working groups that gather information, conduct meetings and provide advice to the Council. These working groups have addressed many of the critical issues including, from the 1996 amendments, consumer confidence reports, small drinking water systems, source water assessments and the contaminant candidate lists. All meetings are open to the public and include time for public comment.

Under the *Safe Drinking Water Act*, the EPA is authorized to file civil suits or issue administrative orders against public water systems that violate the Act when the individual states are slow to take appropriate enforcement action or when states ask them to act. Maximum civil penalties are $25,000 per day of violation. In addition, the SDWA gives any individual or organization the right to bring suit against anyone violating the law – the water supply system, the state or EPA.

The *Safe Drinking Water Act* does not cover wells serving fewer than 25 people.[171]

These amendments strengthened the standard setting procedures, groundwater protection provisions and enforcement. They also mandated filtration and disinfection of drinking water.

In 1986, unhappy with the slow pace of standard development, Congress amended the Act to require the EPA to issue or revise standards for 83 contaminants by 1989. In addition, a timeframe for regulating 25 new contaminants every 3 years was set although this provision was never implemented.

There was also concern that microbial contaminants were not being adequately controlled under the Act. The health goal for total coliforms was set at zero, and requirements for mandatory disinfection and filtration were established. The amendments required disinfection of all public water supplies, and they required all water systems using surface water to filter their water or to meet stringent criteria if they wanted to be granted a waiver from filtration.[172]

These amendments banned lead-based solder, pipes or flux materials from distribution systems.

These amendments also attempted to address groundwater issues by developing voluntary programs for Wellhead Protection and Sole Source Aquifers.

The EPA was asked to specify the "best available technology" for treating every regulated contaminant, and the "best" technology for four contaminant groups: pathogens, organic and inorganic chemicals and disinfectant by-products.

By 1992 EPA had issued regulations for 76 of the 83 contaminants. These contaminants are grouped into four basic rule categories: the Total Coliform Rule which sets the standards for total coliforms, the Surface Water Treatment Rule which mandates filtration and disinfection, the Chemical Rule which regulates chemicals that generally pose long-term health risks, and the Lead and Copper Rule which sets limits on lead and copper and requires water systems to evaluate the pipes in their distribution systems.

1996 Amendments

The driving force behind the 1996 amendments was the environmentalists' concern that there was an unacceptably high level of non-compliance with the *Safe Drinking Water Act* and a lack of enforcement. In many places across the United States water was not tested properly, water was not treated properly, and when illegal contaminants were found no action was taken. Many of the water quality violations were in small systems and the problem of ensuring safe drinking water for smaller communities was a controversial issue.

At the same time industry and governments criticized the Act for being inflexible, enacting rules and regulating chemicals without taking into account health benefits in relation to costs. As well, EPA had fallen behind on the statutory timetable for implementing new contaminant regulations.

[171] 1986 Amendments.
[172] U.S. Environmental Protection Agency, *25 Years of the Safe Drinking Water Act: History and Trends.*

The cornerstone of the *Safe Drinking Water Act* has always been its regulated standards. The 1996 amendments took a new tack. They emphasized the need to set standards based on adverse health effects of contaminants, their occurrence in water systems, and the costs of eliminating them.

Environmentalists fought for improved right to know provisions. They believed that if members of the public were better informed about the sources of drinking water and the contaminants in drinking water, that they would support protection of the sources and infrastructure improvements. The new law expanded the public's right to know about the quality of their drinking water by making annual Consumer Confidence Reports mandatory.

The amendments for the first time emphasized the prevention of pollution and the protection of sources of drinking water by requiring source assessments. These amendments also require national minimum guidelines for the states to certify operators of water treatment systems. In addition, to fund infrastructure costs and the costs of complying with the new amendments, especially for small water systems, the United States established a multi-year multi-billion dollar fund through the State Revolving Fund programme.

Standards development

The 1996 amendments eliminated the requirement that EPA set standards for 25 new contaminants every 3 years and replaced it with a 5-year regulatory cycle. The amendments required that new contaminant limitations be based on risk to human health and on sound science and allow the EPA to take the cost of compliance into account.

Instead of setting new standards every three years, the EPA is now required to publish a list of high-priority contaminants not previously regulated and determine whether to regulate at least five of these contaminants. The EPA requires states to monitor these candidate chemicals so that they can determine how frequently they appear in drinking water. This is known as the Unregulated Contaminants Monitoring Rule. The decision to regulate a chemical is to be based on the best available health information and how widely it appears in the environment.

The EPA was also mandated to finalize the new regulations that were already proposed at the time of the amendments concerning disinfection by-products and *Cryptosporidium*. The EPA is required to review and revise the existng primary drinking water regulations every 6 years.

Source Assessment

Since 1974 the *Safe Drinking Water Act* has had provisions for the protection of groundwater. The original Act contained the Underground Injection Control program, designed to ensure that fluids injected into underground wells are contained within the wells and do not threaten drinking water. Thre was also a provision for designating Sole Source Aquifers, which were important sources of drinking water. If an aquifer is designated, the EPA must ensure that any new federal projects near the aquifer do not pollute it. There is also a voluntary Wellhead Protection Program established in 1986, encouraging states to develop programs to protect land areas around water supply wells.

The 1996 amendments, however, make pollution prevention a major focus. The amendments require that all waters serving as drinking water sources for public water systems be identified and assessed for their susceptibility to contamination. Public participation is an important component of these assessments. The individual states are doing the assessments. They should be completed by 2003 and shared with the public. Once they are done, the assessments can be used as a guide to protecting drinking water sources from harm.

Special attention is being paid to groundwater. The EPA has proposed that all groundwater that is used for drinking water be assessed for contamination problems. Currently, only water systems using surface water or groundwater under the influence of surface water are required to use disinfection. The Centers for Disease Control showed that most waterborne disease outbreaks were associated with groundwater. Under the new Ground Water Rule, periodic surveys off groundwater must be done and wells that are sensitive to fecal contamination must be identified. If groundwater is found to be contaminated or at risk of contamination, it must be disinfected.

Consumer Awareness

Many water suppliers were not complying with their responsibilities for alerting the public to water quality violations. Although this requirement is still in place, environmentalists lobbied effectively for an expanded right to know provision. The new amendments require community water systems to issue annual consumer confidence reports

Beginning in 1999, large municipal water systems had to report annually to the public (usually with their water bills) including information on the water source, violations of any standards for contaminants found in their tap water, and the effect this could have on their health.

The consumer confidence reports must provide consumers with this information:

- the lake, river, aquifer or other source of drinking water;

- a brief summary of the susceptibility to contamination of the local drinking water source, based on source water assessments;

- how to get a copy of the source water assessment;

- the level or range of levels of any contaminant found in local drinking water, as well as the health-based standard for comparison;

- the likely source of that contaminant;

- the potential health effects of any contaminant in violation of an EPA health standard, and an account of actions taken to restore safe drinking water;

- the water system's compliance with other drinking water rules;

- an educational statement for vulnerable populations about avoiding *Cryptosporidium*;

- educational information on nitrate, arsenic or lead in areas where they are above 50 per cent of the EPA standard;

- phone numbers for additional information including the water system and EPA's Safe Drinking Water Hotline.[173]These reports must be written in plain language and provided to all customers of a water system. Some states even require that customers be notified when contaminants are detected even if there is no violation of federal standards.

Systems serving less than 500 people do not have to do these reports but they have to make the information available on request, and systems serving 500 to 10,000 people can use newspapers rather than water bills to inform customers about contaminants.

Environmentalists are still concerned about the inconsistency of these reports and who receives them.[174]

Groundwater Protection

Currently, only water systems using surface water and those using ground water under the influence of surface water are required to use disinfection. This was seen as adequate protection, but the Centre for Disease Control data showed that 318 waterborne disease outbreaks between 1971 and 1996 were associated with ground water systems.[175] The 1996 *Safe Drinking Water Act* amendments required that regulations be developed to ensure disinfection of ground water in public systems, where at least 15 service connections or 25 individuals are served daily for at least 60 days per year, when necessary to protect public health.[176]The proposed Ground Water Rule[177] is based on a multiple-barrier approach that would rely on five major components:

- a periodic sanitary survey of ground water systems using specific criteria;

- hydrogeological assessments to identify wells sensitive to fecal contamination;

- source water monitoring for systems drawing from sensitive wells without treatment or with other indications of risk;

- a requirement for correction of significant deficiencies and fecal contamination; and

- compliance monitoring to ensure that disinfection treatment is reliably operated if and when it is used.[178]

The Ground Water Rule is scheduled to be issued as a final regulation in the summer of 2001.[179]

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[173] *Consumer Confidence Reports: Final Rule,* EPA 816-F-98-007).
[174] *Measuring Up: Grading the First Round of Drinking Water Right to Know Reports, Campaign for Safe and Affordable Drinking Water*, March 2000.
[175] EPA Office of Water, *Proposed Ground Water Rule: Questions and Answers,* April 2000, wysiwyg://25/http://www.epa.gov/safewater/gwr.html.
[176] Ibid.
[177] National Primary Drinking Water Regulations: Groundwater Rule, Environmental Protection Agency 40 CFR Parts 141 and 142.
[178] Federal Register/Vol.65, No. 91/Wednesday, May 10, 2000/Proposed Rules.

Small Water Systems

These 1996 amendments have also attempted to address the problems associated with small water systems that have had difficulty ensuring the safety of their water. States are required to identify the systems with a history of problems, find ways to ensure they have the capability to meet the regulations and develop a strategy to assist them. In addition to these legislative initiatives, the U.S. Environmental Protection Agency in 1994 asked the National Research Council (NRC) to study small water system problems. The NRC created a Committee on Small Water Supply Systems under the sponsorship of the EPA. It reported in 1997[180], finding that the solution to the problem of providing safe drinking water to small communities has three elements. These are:

- providing affordable water treatment technologies;

- creating the institutional structure necessary to ensure the financial stability of water systems; and

- improving programs to train small system operators in all aspects of water system maintenance and management.[181]

Training issues include the fact that training programs are not geared for small system operators and they fail to provide small system operators with the combination of broad general knowledge and hands-on practical training that they need. "Most courses provide general training of a depth that goes beyond what a small system operator will ever require, yet skip many operational basics."[182] In its recommendations, the NRC noted that it has been the belief that a small system operator must exhibit competence in only two broad technical areas, treatment and distribution, but a small system operator also needs to be competent in administrative, financial customer service and other skill areas. The recommendations on training were:

- The EPA should guide the effort to improve training for small system operators (and should reallocate resources that implicitly overemphasize enforcement over technical training, develop multimedia training tools for nation-wide delivery, coordinate efforts to deliver training programs in the field to dispersed operators).

- Safe drinking water agencies should be responsible for delivering training programs developed by the EPA and these should be delivered locally.

- Lead training agencies should prioritize each of the general key training areas and offer training accordingly.

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[179] Although with the change in administration, there is now some uncertainty about this.
[180] National Research Council, *Safe Water from Every Tap: Improving Water Service to Small Communities*, 1997 National Academy Press, Washington D.C.
[181] Ibid., p. viii
[182] Ibid, p. 188.

- States should rewrite their certification laws for small system operators to emphasize the processes employed by the certified operator's particular system.[183]

New Funds

An important part of the 1996 amendments was the authorization of new funds to pay for drinking water programs. A Drinking Water State Revolving Fund program was set up to help finance needed water projects and to pay for programs such as the Source Water Assessment Plans. More than $9 billion has been made available to states under the re-authorized *Safe Drinking Water Act* for infrastructure improvements, to build new systems and protect sources of drinking water. The states may even set aside federal grant money for acquiring land to buffer water sources from contamination or to fund other local protection activities.

Commentary

The U.S. system has been a model in many respects because it has had specific legislation and enforceable standards since 1974. It requires continuous research and establishment of updated standards for a growing list of contaminants. It had the first legal requirement for public reporting by water suppliers of contaminant exceedances (Consumer Confidence Reports) and of the efforts being undertaken to restore water quality.

Individuals and organizations have the right to sue for violations under the Act, and the U.S. government is acting to assess and protect ground water as well as surface water sources of drinking water.

The U.S. has also made use of scientific and public expertise by establishing and supporting the National Drinking Water Advisory Council.

(b) State laws – selective elements from New York and New Jersey

New York State

New York State is one of the most conscientious states in meeting the requirements of the *Safe Drinking Water Act*. Drinking water is primarily the responsibility of New York's Department of Health. It has incorporated the regulations of the Act into its Sanitary Code, and the regulations have to be as stringent or more stringent than the Act. For example, the federal government has recently issued regulations for operator certification, public notification, and filtration standards for trihalomethanes. These regulations all become part of the Sanitary Code.

In a community similar to Walkerton in the United States, the water supplier would have to test regularly for total coliforms. This would be a presence/absence test and if coliforms were present, the sample would be analyzed for E. coli. If the sample is positive for E. coli, four more samples have to be taken and nearby areas sampled. Sampling frequency is based on population. The more people there are, the more often they sample. If they find violations, they take corrective action. They may, for example, draw up a compliance schedule. They do not often seek fines unless they feel the water supplier is not making genuine efforts to comply.

[183] Ibid, pp.193-204.

The results have to be reported within 24 hours to the county health departments. The health departments would issue a boil water advisory. Most of their boil water advisories are the result of broken water mains. If there is a broken water pipe, the health department issues an immediate boil water order and it stays in place for 2 days until sampling shows there is no sign of coliforms.

New York State goes farther than the federal legislation in the area of chemical sampling. In addition to the primary drinking water regulations, New York requires testing for principle organic chemicals which cannot exceed 5 parts per billion, and for unspecified organic chemicals which cannot exceed 50 parts per billion. Propylene glycol is an example of an unspecified organic chemical.

They have both private and public labs. There are New York State labs, county health department labs, municipal and private labs that all do analyses.

They are starting to do source water assessments. First, they have to pinpoint the precise location, latitude and longitude, of each drinking water source. Then they identify the threats to the source including bacteria, organics, and inorganics. The Department of Environmental Conservation will contribute to this by identifying waste discharges and overlaying their information on the Department of Health's. When this information is completed, it will be turned over to the public water systems to address the problems of vulnerability. New York has the ability to adopt watershed rules and regulations but they don't mandate it.

If there is a problem in New York State, it is with individual wells. These are not covered by the federal drinking water act. There are some protective rules for wells. The 100 foot radius around a wellhead should be owned by the water supplier, and the 200 foot radius around it should be a circle of control where the water supplier ensures that no adverse activity take place.

If a homeowner discovers contaminants in his well, the state will provide water on an emergency basis or put special filters on the tap. Leaking underground storage tanks are a particular problem. The government encourages people to be on public systems because there is regular monitoring of public drinking water supplies.

New York City: A Special Case

New York City is an example of intensive watershed protection efforts. Over half the people in New York State – about 9 million – drink New York City water.

U.S. water systems are required by legislation to use filtration to remove pollutants. However, some major cities such as New York, Boston and Seattle have waivers that allow them to avoid filtration if they can control the quality of the water coming into their basins.

Under the Surface Water Treatment Rule (SWTR) from 1996, water suppliers who use reservoirs, lakes or rivers are required to plan for filtration or design adequate watershed protection plans. The intention of the Surface Water Treatment Rule is to reduce the amount of

microbial pathogens in drinking water such as *Giardia* and viruses. The requirements for avoiding filtration are very strict. Annual on-site inspections must be done, no level of turbidity above 5 NTUs[184] can be found in drinking water, and the system cannot have any waterborne disease outbreaks.

Right now, New York still has relatively clean water. It takes its drinking water from surface water sources in upstate New York.. There are 2 watersheds that supply drinking water, the Croton and the Catskill-Delaware. They include 8 counties, 60 towns, one city, eleven villages and over 500 agricultural and horticultural units. There are also more than 100 sewage treatment plants that discharge into the watershed area.

The water is only disinfected with chlorine before it is distributed so that there is a chlorine residual in the pipes. This is done at the reservoirs.

The problem for New York City, however, is the increased population growth and development in the watershed area. To install filtration now for New York City would be extremely expensive -- an estimated $6 to $8 billion. To avoid filtration, a city like New York must be very vigilant in protecting the water supply and guaranteeing its safety. Once filtration is in place, however, the regulatory requirements for protective measures, such as frequent and extensive monitoring and regulations on activities around the watershed, decrease considerably.

The major environmental problems in the watershed area are the runoff from dairy farming operations, discharges from the sewage treatment plants and non-point source contamination from residential and commercial development.

For years, there has been controversy and conflict between New York City and the watershed areas. Residents of these watershed communities complain that they are restricted in their activities so that New York can be spared the expense of building filtration systems. Land use regulations in the watershed mean restrictions on development. Another contentious issue is New York City purchasing land for buffer zones in the watershed areas.

In 1993, the EPA granted New York City an Avoidance Determination if they could prove in one year that it had an effective watershed protection plan. Representatives from New York City, New York State, the watershed communities, and environmental groups got together to negotiate a watershed program. After much delay and dispute, in 1996 the negotiations produced a landmark agreement.

The Watershed Agreement between New York City and the surrounding communities protects the sources of drinking water while considering the rights of those who live in the watershed. Under the agreement, New York acquires land only by buying it from willing sellers and using other voluntary approaches like conservation easements. The City must also develop regulations for watershed land uses, conduct water quality testing, support major investments in sewage treatment plant upgrades and set up a fund for compatible economic development.

[184] Nephelometric turbidity unit

The agreement also sets up the Watershed Agricultural Whole Farm Planning program. The Whole Farm program is a voluntary program with farmers to limit agricultural pollution of the watershed. Demonstration farms were selected to work out how this could be done in a practical way.[185]

New York City has successfully repaired septic systems, reduced runoff through the Whole Farm program, acquired land around key reservoirs and in the watershed area, upgraded sewage treatment plants and brought other sewage treatment plants into compliance. The EPA, however is not satisfied with the amount of land the City has purchased in one of the key watershed areas and the lack of progress in upgrading non-city owned sewage treatment plants.

Fortunately, the 1996 amendments setting up the State Revolving Loan fund allow for assistance for pollution prevention efforts and for activities such as voluntary land acquisitions. In fact, New York State is specifically allocated 15 million dollars to implement its watershed protection strategies, if the state matches these funds.

Commentary

New York State has adopted the U.S. *Safe Drinking Water Act* requirements and gone them beyond them by requiring more extensive chemical sampling.

New York City, dependent on untreated surface water (except for chlorination at the reservoirs), has successfully avoided expensive treatment by undertaking watershed protection measures including voluntary land purchases, a Whole Farm Program to prevent agricultural pollution in the watershed, and reduction of discharges from sewage treatment plants.

New Jersey

New Jersey is another state that has effectively implemented the *Safe Drinking Water Act*.[186] New Jersey passed its own New Jersey *Safe Drinking Water Act* in 1977, a separate and distinct Act that mirrors the federal legislation. Since its inception, environmentalists in the State have been successful in strengthening the New Jersey Act, so that New Jersey has a very solid drinking water regime. New Jersey also has its own Bureau of Safe Drinking Water within the Department of Environmental Protection that is responsible for the programs and activities under the federal *Safe Drinking Water Act*.

In the case of source water assessments, for example, the federal law requires an assessment of current and future threats to drinking water sources based on an evaluation of regulated

[185] See EPA Office of Water, *Watershed Progress: New York City Watershed Agreement,* December 1996, http://www.epa.gov/OWOW/Watershed/ny/nycityfi.htm; Watershed Protection Update,*Watershed Memorandum of Agreement,*March 26, 2001, http://www.ci.nye.ny.us/html/dep/htm/news/wsprot.html; and Annual Water Supply Statement, *1996 New York City Drinking Water Supply and Quality Statement,* January 1998, http://www.ci.nye.ny.us/html/dep/html/wsstate96.html.

[186] The main informal contacts for New Jersey were Sandy Kreitzman, Environmental Scientist, New Jersey Department of Environmental Protection (609-292-5550); Amy Goldsmith, New Jersey Environmental Federation (732-280-8988), and Vince Monaco, Bureau of Safe Drinking Water, Permits and Compliance, Department of Environmental Protection (609-292-5550)

contaminants. New Jersey requires water suppliers to investigate and assess unregulated contaminants in addition to regulated contaminants. This provision was prompted by wells in Toms River, New Jersey, that were infiltrated by a plasticizer. Fifty childhood cancers were linked to this poison.[187]

New Jersey environmentalists have also lobbied for stronger warnings in the consumer confidence reports. Federal law requires that consumer confidence reports contain a warning to vulnerable people about contaminants in drinking water. In New Jersey consumer confidence reports, warnings to the vulnerable must be prominently displayed at the top of the report where violations are recorded. Not only are these reports sent to water customers as required under federal law, in New Jersey they must also be posted in daycare and health facilities, schools and apartment buildings (multi-unit dwellings).[188]

To address the problems of individual wells, New Jersey has introduced new drinking water legislation that addresses this gap in the federal legislation. They will require mandatory testing by owners/sellers and disclosure to buyers/renters for individual wells when there is a realty transfer. Wells on the property that is being sold must be tested for all the parameters regulated by the EPA plus chemicals commonly found in New Jersey's drinking water including radionuclides and pesticides. These parameters would depend on the location. For example, if someone has a well in coastal New Jersey south of Trenton, testing for radionuclides must be done. In these areas naturally occurring radionuclides are a drinking water threat. There is also a provision for zero interest loans for testing and cleanup of private wells.

Another important provision of the New Jersey Act is that the standards must be based on health criteria and not cost criteria. No contaminant can be in drinking water at a level that has a risk factor of more than 1 cancer in a million. Based on this risk factor, the U.S. standard for arsenic has been unacceptably high. The EPA has proposed a new standard for arsenic but the revised standard has recently been revoked. One environmental group, the New Jersey Environmental Federation, is suing the New Jersey State government to it to lower the standard in accordance with the New Jersey law.

In 1983 New Jersey undertook a major review of its own *Safe Drinking Water Act*, and in 1984 new provisions were signed into state law. The most important new requirement was that public community water suppliers test for volatile organic compounds. Although this is one test, it identifies many different volatile organic compounds (VOCs). In 1989, maximum contaminant levels (MCLs) were set for these compounds. Although 22 compounds were identified in the Act, maximum contaminant levels were only set for 16 based on the health data available.

New Jersey's Act also established the Drinking Water Institute, a research group, which provides recommendations to the department. This Institute is unique in that it looks specifically at New Jersey's needs. It has been funded since 1984 by a drinking water tax which collects 3 cents for every 1000 gallons of water sold. The money is used to supplement the money provided by the federal government. It takes care of provisions for New Jersey not covered under the federal

[187] Amy Goldsmith, New Jersey Environmental Federation, personal communication
[188] See New Jersey Environmental Federation, *Accomplishments in 2000,* http://www.cleanwateraction.org/njef/nj_accomp00.htm

Act. For example, it funds a section in the Department of Health that does epidemiological studies. Initially the fund was just over $2 million per year, but because of growth in the state it is now about $3 million.

The Act applies to public community water supplies, which are defined as over 25 people or 15 service connections to year round residents. There are also definitions for non-transient, non-community water suppliers. An example of this would be a public building like a school in a rural area that accommodates at least 25 people for 6 months, 4 hours a day, 4 days a week. All contaminant levels apply to these water supplies, and the monitoring is set out in the federal rules. There are also transient non-community water supplies like a fast food outlet that may have less than 25 employees but serves more than 25 people, open at least 60 days. They have less stringent monitoring requirements – only coliform bacteria and nitrates, acute contaminants. This would also apply to a campground open seasonally where there are less than 25 employees. The small non-community systems under federal legislation only have to test for nitrates once a year but New Jersey requires quarterly reporting.

If there is a positive coliform test found in routine lab testing, the water supplier must do E. coli or fecal coliform tests. Whatever the results, they must do a repeat or check sample. If the system is large at least 3 repeat samples must be done. If it is a small system at least 5 samples must be done in one month. One repeat sample must be done where the original positive sample was taken, another sample must be taken upstream, and one downstream at least 3 service connections away (up and down the street). They must all be tested for coliform and for every sample that is positive, an E. coli or fecal test must be done.

For any combination of the original sample or any repeats that are positive for fecal coliforms or if there is a sample that is total coliform positive above the acute maximum contaminant level, there is a violation of the maximum contaminant level for coliform. The public must be notified immediately within 24 hours. The water supplier must notify the radio station and the newspaper within 7 days. Each customer must be notified within 90 days. If the problem is corrected, no direct notification is required.

As part of the lab certification requirements, whenever the lab does a sample which is positive for E. coli or nitrate, they must notify the water supplier, the local health department and the state Bureau of Safe Drinking Water. There is a hotline number. The state had to argue with the testing laboratories in the late 1980s because the labs wanted to notify only the water supplier.

There is a well-defined process for boil water orders.[189] However, New Jersey is very careful with these orders because of the disruption it causes to hospitals, restaurants and other businesses. If there is a coliform violation and they can't find the problem, they will put the whole system on a boil water order. If there is a disruption of the system, a loss of pressure from a major water main break where there is the possibility of backflow, there will be a boil water advisory. And if there is any problem within the plant like a disinfection problem, there is a boil water order. They had serious problems in September 1999 when Hurricane Floyd flooded a major water plant at Elizabethtown. The turbidity coming in was so high it couldn't be handled

[189] New Jersey Department of Environmental Protection Bureau of Safe Drinking Water, *Guidance for Issuance of Boil Water Advisory,* September 30, 1999.

and the whole system was put in jeopardy. This led to boil water advisories that lasted for a week and affected approximately one million people.

New Jersey is very rigorous in enforcing all environmental legislation. It has zero tolerance for failure to monitor for significant non-compliance from water suppliers who do not regularly report their monitoring results. There is mandatory enforcement of the monitoring law. Unless the problem is severe, an administrative penalty is imposed, with a minimum $1,000 fine. If they fail to report, they are immediately fined. If they pay fines and do the work, the state will settle for 50 to 75 per cent of the assessment. This is done to avoid court appeals by the water suppliers which are costly for the state.

On the other hand, there are no mandatory penalties for maximum contaminant levels. Some water suppliers violate the same maximum contaminant level over and over again according to their monitoring reports, but the state is reluctant to take legal action against them because it would create more problems if they failed to report. New Jersey has not yet worked out a means of ensuring both reporting from suppliers and ensuring compliance with the standards through establishing equally firm enforcement measures in both instances.

Commentary

New Jersey has adopted its own legislation that includes all of the federal legislative requirements and improves upon them for local conditions. It requires testing of individual wells when an owner sells or leases land, and disclosure of the results to the buyer or renter.

For new sources of water, New Jersey requires unregulated substances of concern in the area to be assessed. It has expanded on consumer confidence reporting to require warning to vulnerable people to be prominently displayed on the reports themselves and to be posted at daycares, health facilities, schools and apartments.

Standards are based on health criteria, and the cost of meeting the standards is not considered. Citizen suits are allowed for standards that allow for a risk greater than one cancer per one million people. The state is rigorous in its enforcement efforts, especially with respect to monitoring reporting.

New Jersey has its own research group, funded in part by a water tax, to look at the state's own needs. The tax also funds epidemiological studies.

2.4 Europe:

(a) European Union

The European Union began with the creation of the European Economic Community in 1957. During the early days of European government, any environmental legislation was based only on efforts to reduce barriers to trade between different member states, which was an awkward combination, as the two aims were frequently contradictory. It was not until the increased environmental awareness of the 1970s that there began to be a separate focus on environmental

protection for its own sake. Water quality was one of the first environmental issues to be addressed, with the first drinking water initiative consisting of guidelines for the quality of water in rivers and lakes used as drinking water sources.[190]

The first specific drinking water regulation was the Directive on Drinking Water in 1980 (80\778\EEC), which set binding standards for 44 substances and another 20 non-binding guidelines. As with all European Directives, the requirements were not directly applicable, but member states were required to transpose them into national legislation within a given time period (usually 2 to 3 years).[191] Throughout the 1980s and 1990s, a variety of other water quality Directives were developed to address specific problems. These included Directives on urban wastewater treatment, nitrates, dangerous substances, fish and shellfish waters, bathing water, and groundwater.

A revised Drinking Water Directive (98\83\EC) was approved in 1998, in response to technological developments and other concerns with the 1980 legislation. Most recently, an overall European water policy meant to address all water quality, the Water Framework Directive (2000\60\EC), was introduced in October 2000.

Drinking Water Quality Directive (80\778\EEC and 98\83\EC):

The Drinking Water Directive is the primary vehicle for European drinking water regulation. Both the 1980 Directive and the 1998 revision set specific limits on drinking water contaminants, along with minimum standards for drinking water monitoring and treatment for all European Union member states. The contaminant limits are based on the World Health Organization's Drinking Water Guidelines, in conjunction with advice from the EC Scientific Advisory Committee. As a general principle, the Directives confer a general obligation to provide water that is "wholesome and clean". The Directives apply to all water regardless of origin and whether it is supplied from a distribution network, a tanker, or in bottles or containers - basically everything except natural mineral waters. However, they do not apply to individual supplies serving less than 50 people or less than $10m^3$ a day.

The main change between the old and revised Directives is in the standards for contaminants and the number of contaminants regulated. First, there was an overall reduction in the number of contaminants regulated, with a total of 48 parameters in the new Directive compared to 64 in the 1980 one. These are now divided into mandatory and indicator parameters, similar to the US primary and secondary regulations. In all, the new Directive sets 28 mandatory health-based limits, including 4 microbiological and 24 chemical parameters. There are an additional 20

[190] Barnes, Pamela M. and Ian G. Barnes, Environmental Policy in the European Union. London: Edward Elgar Publishing, 1999, ch. 2.

[191] Environmental policy is administered by the European Commission (EC). The EC is divided into thirty-six Ministry-like Directorates-General (DGs). Environmental policy falls within the Environment DG. It is responsible for ensuring that member states comply with the Directives. The member states themselves are then responsible for enforcing the legislation embodying the Directives. The EC doesn't have the resources to carry out inspections to ensure compliance by member states, but relies on complaints from individuals or groups to trigger an investigation, and if necessary, legal action before the European Court of Justice. The Court has the power to impose a financial penalty if the member state still does not comply, but nonetheless, ensuring compliance is a serious ongoing problem.

indicator parameters, covering limits for substances such as iron and sodium, along with aesthetic qualities such as colour and taste. Several new parameters were added. The revised Directive also introduced a catch-all provision for member states to set values for additional substances if protection of human health warrants it.

One reason for the reduction is that there were significant problems with compliance from countries with the 1980 standards, with few countries managing to meet all of the requirements even by the late nineties. The new Directive was partly intended to make compliance more achievable by all members, particularly where public health would not be affected. As well, European legislation in the early 1990s had introduced the concept of subsidiarity, which sets out the principle of shared responsibility for legislation between the national and supranational levels of government, and that legislation should be made by the level of government best suited to do so. Great differences in water quality and in the ecological characteristics of member states meant that some contaminants were a problem in one area but not in others, with some states complaining about having to monitor for non-problem substances. As a result, subsidiarity also contributed to the decreased EC role in determining standards.

On a positive note, some parameters were made more stringent. There was a reduction in the lead limit from 0.25 mg/L to the WHO standard of 0.1 mg/L. This is a significant reduction that will require large capital investment in some countries to replace lead in distribution systems. Because of this, however, there is a 15-year transition period to implement the new standard. The copper limit was also reduced from 3.0 to 2.0 mg/l. The values for individual and total pesticides remained the same, with more stringent values for certain pesticides. There are also new standards for total trihalomethanes (THMs), although these were accompanied by a less stringent requirement for nitrites to allow the THM goal to be achieved (because of a tradeoff in treatment practices).

Other elements in the new Directive include a statement that "the parametric values are based on the scientific knowledge available and the precautionary principle has also been taken into account", which is important as a statement of principle even if the resulting standards fall short of a truly precautionary approach. Similarly, there is also a statement expressing "increasing concern" regarding endocrine-disrupting chemicals although stating that there is at present insufficient evidence to set parameters for these.

The Directive requires regular monitoring, specifying minimum sampling frequencies for different parameters such as microbiological and aesthetic. In addition, there are specific protocols for monitoring different substances. There is also a requirement for quality assurance for treatment processes, and the equipment and materials used for treatment.

Reporting requirements and mechanisms for public participation are quite weak. There is a statement that member states will ensure that adequate and up-to-date information on drinking water quality is made available to consumers but without specifying what this means. In addition, member states will only be required to submit reports to the European Commission on compliance with the standards every three years, much less useful than annual reports. Another problem is that there is as yet no specified reporting framework, which hampers comparative

analysis, although there is a requirement that one be developed in future. The EC will, however, be required to publish a synthesis report for the entire EC for the three-year period.

Penalties for infringement of the Directive are not specified, with implementation being left up to individual member states.

Currently, the 1980 Directive is still in force, and although the transition to the new Directive is already underway, the new standards will not begin to be legally enforceable until 2003. Starting in 2001, however, utilities or water companies must begin monitoring against any new, tighter standards and to start work to ensure that the standards will be met before they come into force. Future revision is addressed by a requirement for a review of the contaminant limits every five years.

Surface Water Quality for Water Intended as Drinking Water Directive (75/440/EEC):

This 1975 Directive covers all surface water to be used for drinking water. It requires all surface water sources used for drinking water to be classified as A1, A2, or A3, according to the amounts of various contaminants they contain. Surface water that falls short of the limits for the lowest A3 standard is not allowed to be used for drinking water, except under exceptional circumstances. Member states are required to draw up action plans, including timetables, for improvement of surface water sources, particularly for sources that fall in the A3 category. There are requirements for regular sampling to test for a range of parameters, but the specific frequency of sampling is left to the member states to determine.

Water Framework Directive (2000\60\EC):

The Water Framework Directive was introduced in October 2000, and will come into force in three years. The Directive aims to consolidate six existing disparate water quality regulations, including the Surface Water Directive described above, and to move beyond a piecemeal approach by managing all surface water and groundwater in a more integrated manner. It will not encompass the Drinking Water Directive, but it will affect drinking water quality through enhancing source water protection in Europe. The main features of the Directive are:

1. River Basin Management as the model:

- One major change will be to use the river basin as the management unit for the whole range of water quality regulation rather than using separate legislation to address individual problems, for example nitrates or groundwater. The aim of this isto take the natural geographical area and look at it holistically in terms of water quality and water quantity, surface water and groundwater, drinking water, emission limits and environmental protection objectives. Under the Directive, river basin management units will be set up, and river basin management plans for each unit will be established and updated every six years. In recognition of the cross-border nature of natural boundaries, some of these will involve more than one country.

- There is an objective of "good status" for all waters by a set deadline (2015). This will integrate various measures such as aquatic ecology, habitat protection, bathing water, and drinking water protection for each river basin unit.

2. Disposal of hazardous substances:

   There will be an end to the release of hazardous substances into water with gradual reductions aiming at a deadline of 2025 for the first round of substances.

3. Groundwater protection:

   Member states will have to implement measures to prevent or limit the input of pollutants into groundwater, to prevent the deterioration of the status of all bodies of groundwater, and to reverse any significant upward trend in the concentration of any pollutant caused by human activity. However, the Framework does not contain the specific measures to be implemented. These will be addressed by 2002 in a "daughter" Directive. Member states are also expected to achieve "good groundwater status" by 2015, including protection and restoration measures and a balance between removal and recharge.

The public consultation on the Directive was quite contentious, and although the final Directive is generally seen as a positive development, environmental groups have important reservations. Criticisms from one group included:

- the lengthy timeframes, with the possibility of unnecessary extensions

- that there should be a more precautionary approach, particularly with respect to the most hazardous substances

- lack of protection for wetlands[192]

(b) England:

The UK differs from Canada by the fact that a significant percentage of the legislation is determined by requirements established through various European Directives, so there is less latitude for decision-making at the national level than there would be in Canada or the United States. Comparison with the UK is further complicated by the fact that drinking water systems have been privatized in England and Wales since 1989, and there is consequently a somewhat different regulatory structure. While drinking water legislation is similar throughout the UK, England will be used as the example here since devolution has meant that Scotland, Northern Ireland, and increasingly Wales often have their own versions of legislation, along with varying degrees of separate administration. Since privatization, there has been a great deal of public concern in England with water supply and pricing issues, and now with new measures to allow

[192] World Wildlife Fund. European Freshwater Programme, "The EU Water Framework Directive " < http://www.wwffreshwater.organization/initiatives/wfd.html >, accessed November 16, 2000.

competition. The major public health threat has been from *Cryptosporidium*, as there have been several significant outbreaks in recent years.[193]

The current regulatory regime and administrative framework was introduced in 1989 when privatization took effect. Water is supplied by one of 27 water-only or water and sewerage companies, which currently operate in distinct geographical areas. They are monitored regarding water quality by the Drinking Water Inspectorate (DWI), which is part of the Department of Environment, Transport and the Regions (DETR). The Drinking Water Inspectorate is responsible for ensuring that the water companies are providing water that meets the quality and standards set by the UK drinking water quality regulations. Some of their activities include carrying out inspections and audits of water companies, providing a publicly available report each year on each water company's performance, and providing direction and advice to the water companies on fulfilling their regulatory obligations. They also investigate customer complaints and can prosecute water companies found to be providing water unfit for human consumption.

Ofwat (the Office of Water) is the economic regulator of the water industry. Ofwat is responsible for ensuring that the water companies provide good quality service at a fair price, and that they are carrying out their responsibilities under the Water Industry Act 1991. They are also required to administer 10 regional Customer Service Committees to represent customer interests and provide feedback on customer concerns.

The Environment Agency (EA) is responsible for environmental protection, which includes the protection of freshwater quality in England and Wales. The EA undertakes routine monitoring and classification of surface water chemical and biological quality, in order to determine if the water meets minimum standards required for use as a source of drinking water and for other purposes. There is a groundwater protection program as well, although not as rigourous.

The *Water Industry Act 1999:*

The equivalent of the *Safe Drinking Water Act* for England is the *Water Industry Act 1999,* which is the main statute specifically concerning drinking water. It governs the operation of the private water companies and includes:

- licencing, duties and responsibilities of the water companies with respect to issues such as water quality, water supply, information reporting and record keeping, and consumer relations

- the principle that it is a criminal offence to supply water that is "unfit for human consumption", although this term is not defined and is interpreted by the courts on a case by case basis

- enforcement procedures

[193] UK information sources included Milo Purcell, Principal Inspector, UK Drinking Water Inspectorate, and Dr. Gordon Nichols, scientist with the Public Health Laboratory Service

- consumer protection measures

- water pricing and rules for applying charges

- water company powers and rights

The 27 water companies are licenced under the *Water Industry Act*, which governs their appointment and regulation as "water undertakers", and their duties and responsibilities in complying with enforcement orders, providing customer service, maintaining water supply, and providing water quality standards. However, one notable omission is the lack of training requirements for staff at the water companies, as the level of training required is left up to the water companies to determine through their hiring procedures.

One strong feature of the UK system is the existence of a single agency focused on drinking water quality. The Drinking Water Inspectorate (established in 1990 under s. 86 of the *Water Industry Act)* is staffed by specialists and is focused solely on drinking water.[194] The DWI ensures that the water provided to customers is wholesome and fit for consumption. It also ensures that companies carry out monitoring and treatment in accordance with UK standards, and that they provide information on monitoring results to the public. Accountability is aided by the Drinking Water Inspectorate's *Code for Enforcement*, which outlines the role of the Drinking Water Inspectorate and the level of service and performance people can expect. It discusses the role of the DWI in carrying out monitoring and inspection of water companies, and sets out time frames for response and the kind of action the DWI will take in response to various incidents. The *Code* also sets out a policy of openness in responding to public inquiries on drinking water quality and DWI activities.[195] Results of enquiries and actions taken are made available to the public, and are posted on their web site.

The Drinking Water Inspectorate also undertakes a large research program, and administers all of the Water and Land Directorate research for the Department of the Environment, Transport and the Regions (with a £3,600,000 budget in 1999). They play a major role in contributing to drafting regulations and standards on drinking water, and undertake scientific research on their own as well as in conjunction with the water industry and with other groups in the European Union and the United States. They have been particularly active recently in research regarding *Cryptosporidium*.

<u>The Water Supply (Water Quality) Regulations:</u>

Another strength of the UK system is the existence of legally enforceable health-based standards, although these were introduced primarily because of the need to implement the first EC Drinking Water Directive (80\778\EEC), as well as because of the greater regulatory responsibility created by privatization. Prior to 1990, the UK did not have any numerical standards for

[194] Officially, the Secretary of State for the Environment, Transport and the Regions and the National Assembly of Wales are responsible for the regulation of drinking water quality, but in practice the day-to-day work of carrying out this responsibility is delegated to the Drinking Water Inspectorate

[195] UK Drinking Water Inpsectorate, Code for Enforcement, (http://www.dwi.detr.gov.uk/aboutus/code4enf.htm, accessed February 13, 2001)

drinking water quality. The standards are incorporated in the Water Supply (Water Quality) Regulations 1989 under *the Water Industry Act*. These regulations will eventually be superseded by the Water Supply (Water Quality) Regulations 2000, largely to incorporate requirements of the new European Drinking Water Directive (98/83/EC) which requires some tighter standards, so the UK is in the midst of a transition period at present.[196]

The Water Supply (Water Quality) Regulations contain most of the requirements for ensuring drinking water quality in England. With respect to standards, the regulations state that water companies must supply "wholesome" water, which is defined by the requirements which must be met, including the EC drinking water standards along with 11 national standards. The new regulations will have a total of 55 numerical standards and 2 descriptive ones. There is an additional qualitative requirement that water must also not contain anything else at concentrations that would potentially endanger human health. Water supplied must also not contain anything at an amount which, in combination with any other substance in the water, would constitute a potential health threat.

To meet the new EC Directive requirements, many of the limits will be tightened, including lead, copper, and arsenic. The lead standard is being lowered in two stages from 50µg/l to 25µg/l by 2003, and 10µg/l by 2013. Initial improvement to meet the first standard will come primarily from additional treatment, while the 2013 standard will require the replacement of lead pipes in the distribution system. Meeting the copper limit is not expected to be a problem. The arsenic limit is being tightened to 10µg/l from 50µg/l, and there are also a few new parameters. Capital costs for water companies to meet the tighter standards from 2000 to 2005 are expected to be around £480 million.[197]

The new regulations also incorporate the concept of indicator parameters from the new EC Directive, which reclassifies some substances as not requiring remedial action unless there is a perceived health risk. For these substances, the Inspectorate will now have less of an investigative and enforcement responsibility unless the companies exceed the generally higher levels of these substances that will be deemed to be a health risk.[198]

While the EC Directive determines most of the parameters, some national standards are also set. These would normally be set because of a response to apparent local need and public demand, rather than following what is done in other jurisdictions such as the United States. For unforeseen microbial pathogens, the Drinking Water Inspectorate would rely on the Public Health Laboratory Service, the organization in the UK that monitors disease outbreaks, to alert

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[196] Some transitional aspects of the new water supply regulations came into effect as of January 1, 2001, but the full transition won't be until January 1, 2004. This description refers to the 2000 regulations, because the most recent regulations represent current thinking in the UK, with the new elements indicated where applicable.

[197] UK Department of Transport, Environment and the Regions. *The Water Supply (Water Quality) Regulations 2000*, Regulatory Impact Assessment (http://www.environment.detr.gov.uk/wqd/riafinal/, accessed February 15, 2001)

[198] UK Department of the Environment, Transport and the Regions. *The Water Supply (Water Quality)(England) Regulations 2000*: Consultation on Regulations (April 2000), p. 13, (http://www.environment.detr.gov.uk/consult/watersup/index.htm , accessed February 2001.

them to any new dangers. The DWI also undertakes a broad program of research into drinking water issues, including possible new pathogens.

England has set national standards in the *Cryptosporidium* regulations of 1999. These were established in response to public demand (see *Expert Group on Cryptosporidium in Water Supplies* below). Another example where England diverges from the EC is in setting mandatory standards for some substances such as iron and manganese, which the EC Directive lists as non-mandatory indicators. This is related to the privatization of water in England, since these substances affect aesthetic qualities that are considered necessary to ensure that water is fit for human consumption, even though they may not endanger public health. For example, there was a recent case involving "black coffee" water which looked revolting and damaged pipes in Yorkshire, where the company was charged with providing water unfit for human consumption even though the company claimed that the water was just discoloured but otherwise fine.[199] Turbidity is also considered a mandatory standard in *The Water Supply (Water Quality) Regulations* because there has been a strong correlation in England between turbidity and *Cryptosporidium* outbreaks.

Updates to the standards vary. For standards based on the EC Directive, the regulations in the UK are changed where needed in order to meet the requirements. There is a requirement for an overall five-year review of the EC standards at the European level. There is no corresponding requirement in the UK for periodically reviewing national standards, but they can be amended at any time based on evolving circumstances.

The regulations contain quite detailed requirements for how sampling should be done, some of it derived from the EC Directive and some nationally-based. This includes sampling locations, frequencies, and acceptable sampling and analysis methods for particular substances. Sampling is to be done in general at consumers' taps except where this is not considered necessary by the DWI. New sources of water need to be monitored more frequently, while less frequent monitoring is allowed for sources that have been in full compliance for several years. There are stringent monitoring and treatment requirements for *Cryptosporidium.*

The water companies are required to do their own sampling, collectively carrying out approximately 2.8 million tests per year, and are required to send in monthly and twice-yearly reports of results to the Drinking Water Inspectorate. Statistically, reported water quality samples met the required standards in 99.82% of tests in 1999, representing an increase from 98.7% of samples in 1992. This represents a decrease from 50,476 failed test samples in 1992 to 5,148 in 1999, a figure which has been decreasing each year. On its own, this represents a distinct achievement, reflecting the benefit of having enforceable standards backed up by a strong system of regulatory oversight.[200]

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[199] The Guardian, Saturday, December 9, 2000, (www.guardian.co.uk/Archive/Article/0,4273,4102988,00.html, accessed February 10, 2001)

[200] Drinking Water Inspectorate. *Summary of 1999 Results* (July 12, 2000), (www.dwi.detr.gov.uk/pugs/coreport/hgood99.htm , accessed February 15, 2001)

There are rigourous controls in place regarding laboratories. There is a requirement in the water quality regulations that laboratories used for testing have a system of analytical quality control in place that is checked periodically by an independent accredited inspector. The Drinking Water Inspectorate has an agreement with the UK Accreditation Service to set special standards for laboratories accredited to perform drinking water analysis.

In 1999, 388 "events" were reported to the DWI. Of these, 166 were deemed to be non-trivial, potentially health-related incidents, affecting water supplied to around 3.8 million customers. There were 102 non-trivial incidents in 1997 and 124 in 1998, so it is harder to discern a trend for these.[201]

England has a dual approach to enforcement. This involves enforcement orders to handle most problems, with prosecutions to handle serious problems of non-compliance. The water companies are required to initially investigate any failure to meet a drinking water quality standard and to establish the cause and nature of the failure, and must report the results to the Drinking Water Inspectorate. The Inspectorate is then required to investigate any event that could be of concern to public health and to set out the steps that must be taken to correct the situation. This is done through enforcement orders, which initiate an undertaking from the water company requiring an action to fix the problem. These enforcement orders are the primary means of day-to-day enforcement of the regulations, and in the last ten years, there have been around 2,700 enforcement orders issued. The regulations also allow the companies temporary non-compliance with the requirements of the order while action is being taken to work towards compliance. However, this process of correction can take up to three years, during which time the company would only be moving towards full compliance, so it is not available for microbial problems requiring immediate action.

The number of prosecutions is much smaller. In order to prosecute a water supplier under the *Water Industry Act*, the Drinking Water Inspectorate must be satisfied that two factors have been met: first, that water was supplied that was unfit for human consumption, and second, that the company didn't act with due diligence. There have been about 30-40 prosecutions in the last ten years, which tend to be public, high profile events, generally resulting in the imposition of fines.

There are water treatment provisions to conform to EC and national requirements for classifying, withdrawing, and treating water intended for human consumption. A mechanism of approvals for water treatment products and processes is also addressed. The new regulations introduce special treatment provisions where the presence of lead or copper in the distribution system is known, in order to meet the more stringent standards for these substances in the new EC Directive. The water companies are expected to draw up programmes of work for compliance with the standard in 2001. Another new requirement is that if a company discovers that a failure to meet standards at the tap is due to domestic plumbing, they must inform consumers there is a problem and how best to fix it, whether this is due to lead or anything else such as microbial contamination.

[201] Drinking Water Inspectorate. *1999 Annual Report* (July 2000), (www.dwi.detr.gov.uk/pubs/annrep99/index.htm, accessed February 15, 2001).

The regulations also address record keeping and information provisions for drinking water. There is a general requirement to maintain all records, and a requirement to make any record available to the public for inspection free of charge at least one of its offices. They must also notify the public of their right to inspect records of water quality with at least one account statement every year, informing them of the address and hours where they can do this. In addition, the water company must supply an annual report to the local authority containing information on the water quality supplied to the authority's area which is to include information on the number and percentage of samples taken which contravened the prescribed limits for the various parameters and the minimum, mean and maximum concentrations of each parameter in the area's water for each treatment works, each service reservoir, and each overall water supply zone. They must also publish this report. The DWI posts an annual summary of the results for each water company on its Internet site.

There are also clear notification guidelines. With respect to incidents, there is a requirement to notify the local authority, the district health authority, and the customer service committee "as soon as may be" after an event which gives rise to or is likely to give rise to a significant health risk and to send the DWI a copy of every such notification. Local authorities are also given the right to take and analyze their own samples of water supplied to premises in their area, as they require.

The EC Directive only requires reports on the state of drinking water quality every three years, but the UK requires water companies to report to the DWI much more frequently. DWI in turn publishes annual reports on each company and on the comparative overall situation, and will continue to do this. The Drinking Water Inspectorate sets out detailed reporting requirements for water companies in The Water Undertaker's (Information) Direction 1998 under the *Water Industry Act 1991*, which came into force in February 1998. This *Direction* means that enforcement procedures can now be initiated against companies that fail to provide compliance data.

Required information includes:

- annual reports on the number of samples required and the number taken, any contraventions of limits and overall values of substances, information on any authorized relaxation of sampling requirements, any increased or decreased frequency of sampling allowed, and reports on progress on any actions which have been required to meet compliance;

- in addition to the annual reports, the companies must submit monthly reports on any samples which exceeded prescribed values, indicating the parameter exceeded and the amount of variance; and every six months, the companies must report any contraventions of the sampling frequency requirements for their areas;

- water companies which are undertaking improvements to the distribution system must provide an annual report on the state of these; and

- annual reports on concentrations of lead in water supplied, along with any action taken to replace lead pipes and to install any water treatment related to lead.

The *Direction* also contains requirements for water suppliers to notify the Inspectorate in the event of any incident which might affect public health and any reports of disease in the community that might possibly be associated with water supply. They are also to report on any other water supply matter which "is of national significance, has attracted or might attract significant publicity, or that has caused or might cause significant concern to consumers". This notification must be made as soon as the supplier is aware of the problem "by telephone or other appropriate means", and in writing not less than 72 hours later. The notification must include:

- particulars of the event or matter
- an assessment of the effect of the matter on water quality or supply
- an estimate of the population affected and whether sensitive populations are involved
- any available information on the cause or likely cause of the matter
- information on any action taken or proposed to be taken, to inform and protect customers, and to rectify the situation
- a list of persons notified of the matter and a copy of any notices issued to the customers or the press
- the number of complaints from customers and contact information for complainants (or the first 50 if more than that complain)

One month later, a report detailing the results of an investigation into the matter must be submitted. [202]

Much of the strength of the UK system lies in the existence of enforceable standards with an accountable monitoring, reporting, and enforcement system to back them up in day-to-day practice. Necessitated in part by privatization, this system has taken time and effort to achieve. Under privatization, the water companies regulate themselves through carrying out their own sampling, investigating, and reporting. There were problems with false monitoring in the early years of privatization, which were publicized and prosecuted. Ensuring a rigorous system of sampling and reporting was difficult to establish, requiring major changes to the way water sampling, collection, and analysis was organized. Still, without the resources to independently check every sample, the system ultimately has to rely on the threat of publicity about adverse incidents damaging a water company's public reputation and share price.

The main scope for falsifying records was determined to be in three areas, and the Drinking Water Inspectorate instituted provisions to deal with each as follows:

[202] The Water Undertakers (Information) Direction 1998, (http://www.detr.gov.uk/dwi/regs/infolett/1998/pdf/infdir98.pdf , accessed March 10, 2001)

1. where and when the companies take samples - the main protection against falsification here lies in establishing a clear audit trail from the planning stage of a company's testing for the year to the final results that appear on the public record, along with the possibility of random checks, since the DWI has the right, along with the relevant local authority, to appear unannounced and check the company's records at any time.

2. in the laboratory - the existing accreditation system for laboratories in England was not considered to be sufficient to protect drinking water, so the DWI rewrote the entire quality control system for laboratories for drinking water testing and this system now applies

3. through lab information management systems - the point at which test results are received and put on the public record. There are now special data diagnosis systems and audit requirements for these systems in order to ensure the accuracy of information

The *Water Resources Act*

Source water protection in England is primarily governed by the *Water Resources Act 1991*. The *Water Resources Act* is concerned with overall water resources management. The Environment Agency has administered the Act since 1995, when the Environment Agency was established.[203] The Act includes duties to achieve and maintain water quality objectives, the prohibition of certain discharges, requirements to take precautions against pollution, and the power to define certain areas as nitrate sensitive areas or water protection zones with greater controls on pollution. An important impetus for setting water quality standards has been the need to meet various EC Directives applying to water used for bathing waters, freshwater fish and shellfish waters, or drinking water.[204]

In response to the EC Nitrates Directive (91/676/EEC), the *Water Resources Act* allows the EA to establish nitrate sensitive and nitrate vulnerable areas. These are intended to protect water against pollution caused by nitrates from agricultural sources such as chemical fertilizers and livestock manure, in part to safeguard drinking water supplies. Nitrate Vulnerable Zones are designated in areas where surface water or groundwater exceeds or is at risk of exceeding the EC nitrate concentration limit of 50 mg/l. In England and Wales, 68 Nitrate Vulnerable Zones have been designated which have required farmers to reduce nitrate leaching from their land beginning in December 1998, following codes of good agricultural practice.[205]

The Environment Agency also has the authority to establish water protection zones to further protect at-risk surface water sources. A water protection zone is a defined catchment area with additional measures to prohibit or restrict activities such as the storage of use of controlled substances in order to decrease the pollution of surface water. So far, however, it has only established one of these, the River Dee Water Protection Zone, which was established in 1999. The River Dee provides drinking water for over two million people in the area of Merseyside and

[203] Prior to that, the National Rivers Authority administered the Act.
[204] *Water Resources Act 1991* (U.K.), 1991.
[205] UK Department of Environment, Transport, and the Regions, Water Quality Report, < www.environment.detr.gov.uk/wqd/guide/water.htm, accessed Nov 16, 2000; Environment Agency. Environment 2000 and Beyond

Cheshire in Western England, along with northeast Wales. The River Dee zone was set up because there are a lot of industrial sites using chemicals upstream and there had been several serious pollution incidents affecting the drinking water supply. Industries within the catchment zone are required to have materials used or stored assessed for the risk that they might pose, and all materials must be authorized. The implementation of the zone involves additional pollution prevention requirements by industry, and is currently over 50 % complete.[206]

The Surface Waters (Abstraction for Drinking Water) (Classification) Regulations:

For surface water used a source of drinking water, the two EC Surface Water Abstraction Directives (75\440\EEC and 79\869\EEC) are given effect in UK legislation by The Surface Waters (Abstraction for Drinking Water) (Classification) Regulations 1996. The regulations set water quality standards for surface water used as a source of drinking water. Water is classified as either A1, A2, or A3, based on meeting mandatory limits for contaminants, as set out by the EC. The UK has 162 A1 and 298 A2 sources, with no A3 sources. The regulations also set out the methods of measurement and the sampling frequency and analysis, for each site drinking water is taken from. The Environment Agency is responsible for undertaking the monitoring and ensuring compliance with the regulations.[207] The Environment Agency also uses a more detailed General Quality Assessment (GQA) scheme to classify stretches of fresh water in terms of chemical, biological, nutrient and aesthetic qualities; with six categories ranging from Very Good (Class A) to Bad (Class F).

There is less protection for groundwater but the system is based on the EC Groundwater Directive. This allows the establishment of groundwater protection zones to try to diffuse pollution by restricting potentially polluting activities.

Expert Group on Cryptosporidium in Water Supplies:

Cryptosporidium has been an ongoing problem in the UK. From 1990 to 1997, there were eleven suspected waterborne outbreaks of cryptosporidiosis investigated by the Drinking Water Inspectorate, including a serious one in Northwest London and Hertfordshire in 1997 from a groundwater source, where the DWI prosecuted the water company but was unsuccessful because of a technicality. Public pressure in response to this led to the government re-establishing an Expert Group on *Cryptosporidium* in Water Supplies, under the Chairmanship of Sir Ian Bouchier. This group was given the job of studying past waterborne outbreaks of cryptosporidiosis, along with research undertaken since 1995, in order to determine if there was a need for considering strategies such as source water protection, additional water treatment, monitoring programmes, or the management of outbreaks, and whether further research was needed.

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[206] *The Water Protection Zone (River Dee Catchment) Designation Order 1999* (U.K.), S.I. 1999/915*; The Water Protection Zone (River Dee Catchment)(Procedural and Other Provisions) Regulations 1999* (U.K.), S.I. 1999/916; UK Environment Agency. The River Dee Water Protection Zone <www.environment-agency.gov.uk/modules/MOD38.206.html > accessed February 12, 2001; UK Environment Agency. The River Dee Water Protection Zone - Summary of Progress (correspondence)

[207] The Surface Waters (Abstraction for Drinking Water) (Classification) Regulations 1996 (U.K.), S.I. 1996/3001

This Expert Group reported jointly to the Departments of Environment, Transport and the Regions and the Department of Health, recommending controversial, tough new treatment and monitoring requirements. The Group concluded that "outbreaks of water related cryptosporidiosis do not just 'happen'". There was a strong correlation between outbreaks and the existence of inadequacies in either the treatment provided or the treatment process, or in treatment works operating above capacity. Peaks of turbidity in water leaving treatment plants were found to be a unifying factor in all outbreaks, making adequate turbidity monitoring essential. Specific recommendations in the Expert Group included:

- the need for water companies to be vigilant in monitoring for the presence of *Cryptosporidium*

- increased awareness by water companies of situations which increase the risk of contamination, such as turbidity

- the need for effective local outbreak management plans with designated incident and outbreak management teams, and the importance of ongoing coordination and rehearsal as preparation for possible events

- greater coordination between water companies and public health officials in the event of an incident

- monitoring outbreaks at the national level through making human cryptosporidiosis a laboratory reportable disease

- the need to assess all groundwater sources, catchment areas and hydrogeological factors for potential contamination risk

- further application of the Code of Good Agricultural Practice to help protect agricultural impacts on groundwater

- that water companies carry out a risk assessment of risk from *Cryptosporidium* for each source with periodic review, and review monitoring and treatment systems against the level of risk, ensuring that systems are appropriate to the level of risk

- treatment works should have the capacity to handle peak turbidity levels and a range of turbidity monitoring processes should be introduced

- the introduction of continuous monitoring processes for all sites deemed to be at high risk as determined by the risk assessments

- additional research requirements [208]

[208] UK Department of the Environment, Transport and the Regions. *Cryptosporidium* in Water Supplies, November 1998 (http://www.dwi.detr.gov.uk/pubs/bouchier/index.htm , accessed January 31, 2001)

The recommendations resulted in new regulations coming into force in June 1999 (the Water Supply (Water Quality)(Amendment) Regulations 1999), to be implemented by the Drinking Water Inspectorate. Risk assessments of facilities were required by October 1999, based on source water quality and previous monitoring results. As a result, 335 of 1500 sites were considered to be at significant risk. Some of these were abandoned because the cost of bringing them up to the new treatment standards would have been too great. The others have implemented new continuous monitoring and treatment provisions.

Although it is still early to evaluate the impact of the new regulations, health and regulatory officials consider that the *Cryptosporidium* regulations represent the most significant advance in protecting drinking water in the last decade. First, there is the direct benefit of an anticipated reduction in *Cryptosporidium* incidents. To date, there has already been one instance where continuous monitoring indicated a problem with *Cryptosporidium* in time to allow the water supplier to switch to another source.

Also, as in other jurisdictions that have instituted reforms in response to outbreaks, implementing the Expert Group recommendations resulted in increased scrutiny of the entire water treatment system. There has been an enhanced operational surveillance of the overall treatment process with earlier detection of problems. Other benefits include the removal of the most serious at-risk facilities from the system, more serious attention to monitoring and reporting on the part of water companies, rigorous laboratory requirements, and increased preparedness at the local level.

Finally, there is a strengthened enforcement power. In the case that sparked the formation of the Third Expert Group, the criminal prosecution of South West Water for the supply of water unfit for human consumption failed because the epidemiological study linking a serious *Cryptosporidium* outbreak to the water supply was ruled as inadmissible evidence. In the event of a future outbreak, the stronger evidence provided by continuous monitoring would make any future prosecution more likely to succeed.[209]

Commentary

The fact that the European Union sets mandatory standards applicable to all member countries raised the bar for improved water quality generally throughout Europe. In England and Wales aging treatment plants have been upgraded to meet the standards. Thorough oversight of the water companies through the Drinking Water Inspectorate was established as a necessity in England because of the privatization of water suppliers. The Inspectorate carries out inspections and audits of water companies, reports publicly on companies' performance and provides advice and direction to companies about their regulatory obligations, investigates customer complaints and prosecutes water suppliers who don't meet the standards. This single agency concept, with clear responsibility, would be useful in a public sector system as well.

[209] UK Department of the Environment, Transport and the Regions. Public Health and Drinking Water: Preventing *Cryptosporidium* Getting into Public Drinking Water Supplies, June 5, 1998, Annex D: Regulatory appraisal on the proposed Water Supply (Water Quality) (Amendment) Regulations 1998, (www.environment.detr.gov.uk/wqd/consult/*Cryptosporidium*/cryptob.htm, accessed November 16, 2000)

The extensive investigation by the UK Expert Group to deal with ongoing *Cryptosporidium* concerns in the UK is useful to all jurisdictions dealing with these new threats. Its finding that, although *Cryptosporidium* is difficult to detect, there was a high correlation between peaks in turbidity for water leaving treatment plants and the presence of *Cryptosporidium*, led to the conclusion that turibidity monitoring and treatment upgrades were essential. While the establishment of a standard may not be possible, the Expert Group's unambiguous verdict that *Cryptosporidium* outbreaks were very much not a random accident, and that much can be done is encouraging. The resulting regulation resulted in the closing of substandard plants and improvements in others, along with a general strengthening of the entire water treatment framework, which to date has been cause for optimism.

2.5 Australia

Australia has a constitutional structure much like Canada. Although guidelines are set at the national level, the actual regulation of drinking water quality is done at the state and territory level. The Guidelines were developed by the National Health and Medical Research Council (NHMRC). The first water quality guidelines for Australia were developed in 1972. They were updated in 1980, 1987 and 1996.[210]

New South Wales provides the focus for the discussion of Australia's regulatory regime with respect to water. It is the most populous state in Australia, with four metropolitan water suppliers – Sydney Water Corporation, Hunter Water Corporation, Gosford City Council and Wyong Shire Council. The Sydney Water Corporation (Water Corporation) services the metropolitan area of Sydney. There was a suspected *Cryptosporidium* and *Giardia* outbreak in Sydney in 1998, resulting in an inquiry and subsequent legislative and institutional changes arising out of the Inquiry's recommendations.[211] For this reason, the Sydney regime has been emphasized although some reference will also be made to the other metropolitan suppliers and to the non-metropolitan or smaller suppliers.

Sydney Water Corporation supplies more than 3.75 million residential customers and 73,000 businesses. It provides water supply, sewerage services and wastewater disposal. The drinking water is drawn mostly from catchments on four main river systems. Water is filtered, disinfected and flouridated at eleven water filtration plants. Four of these are operated by private companies.[212]

The *Sydney Water Act* 1994 requires the Water Corporation to pursue commercial, environmental and public health objectives equally (s.21(2)). In contrast, statutes creating corporate water authorities in Victoria, Western Australia and England have only commercial aims and objectives, including customer service, efficiency and competition.[213] Specifically, s.21 of the Act requires the Water Corporation to:

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[210] Australian Productivity Commission. *Arrangements for Setting Drinking Water Standards, International Benchmarking* (April 2000), p.16.
[211] See < http://www.premiers.nsw.gov.au/pubs.htm#SYDNEY WATER INQUIRY >for the reports.
[212] Australian Productivity Commission, p.199.
[213] Ibid.

- be a successful business and, to this end operate at least as efficiently as any comparable business, to maximise the net worth of the State's investment in the Corporation, and to exhibit a sense of social responsibility by having regard to the interests of the community in which it operates;

- protect the environment by conducting its operations in compliance with the principles of ecologically sustainable development contained in s. 6(2) of the *Protection of the Environment Administration Act 1991;* and

- protect public health by supplying safe drinking water to its customers and other members of the public in compliance with the requirements of any operating licence.

In 1998 (in response to the Sydney water crisis) the NSW government enacted legislative amendments (Water Legislation Amendment (Drinking Water and Corporate Structure Act) 1998) to make the company a statutory state owned corporation (section 4(2)) with more accountability to a responsible Minister. The amendments also provided the Minister with greater powers to access information and to direct the Corporation on the grounds of urgency, public health and safety.[214]

Accountability

New South Wales still has a relatively fragmented system of accountability, with a mixture of health statutes and other environmental statutes. Sydney's legislative structure provides a good illustration of the myriad of relationships and requirements, even though it has its own legislation, the *Sydney Water Act 1994.*

The Office of the Regulator-General, Victoria (ORG) has been quoted as believing that a single body, such as the Drinking Water Inspectorate that regulates the UK water industry, could better oversee water quality:

> The Office considers that best practice water quality regulation is based on primary responsibility being consolidated within a single body which pro-actively monitors water quality against an appropriate and comprehensive range of standards and ensures a holistic catchment to customer tap approach is followed in preventing water contamination (ORG 2000, p.9) [215]

Licences and Memoranda of Understanding (MOUs) provide the main regulatory tools. MOUs must be reached with the Health department, the Environmental Protection Authority, and the Water Administration Ministerial Corporation (s.35). The MOUs are meant to clarify roles and responsibilities and facilitate cooperative relationships between the signatories, including agreed areas of study and data exchange. NSW Health has powers under its own legislation and the

[214] Ibid, p.200.
[215] Ibid, p.230.

Sydney Water Act 1994 to enforce the MOU obligations.[216] The *Sydney Water Act* binds the Crown (s.98).[217]

The NSW Health Ministry is responsible for assessing whether suppliers comply with monitoring requirements set out in the Guidelines.

Regulations versus Licensing

Regulations are not used to set out requirements. Instead, the national guidelines established by NHMRC apply if they are made applicable and enforceable through licences for the major suppliers. The licence sets out operating and customer standards, including drinking water quality standards. The customer contract provided for in the licence and described later under "Community Right to Know" is legally enforceable by any customer.

The Sydney Water Catchment Management Act 1998 requires the Catchment Authority to enter into arrangements with the Water Corporation relating to water quality standards for water to be supplied, continuity of water supply, maintenance of adequate reserves and the price of water supplied to the Water Corporation.

A Licence Regulator under the Sydney Water Act is to conduct an annual operational audit to assess compliance with the conditions of the Operating Licence.

The licensing system has several problems. An Australian commentator notes the inequalities in the system:

> The failure of licensing as a water quality management system is that it does not implement a program based on the same public health criteria for all Australians. At present mainly metropolitan areas in Australia, Sydney, the Hunter Valley, Melbourne, and Perth have licences that bind the respective authorities to NHMRC guidelines. The irony of this from a public health perspective is that health related parameters included in NHMRC guidelines are extrapolated from case studies of adverse health effects, toxicological and epidemiological studies, where all human subjects are of equal importance and value. At present licensing with health criteria is primarily administered in urban areas, approximately 50 per cent of the nation's population. This approach neither puts in place an impartial program that systematically investigates the feasibility of mandatory water standards for all Australians, or ensures that the ethical obligations of a safe water supply are satisfactorily pursued. Mandatory water standards should set a floor

[216] Ibid, p. 201.

[217] The wording of the provision, slightly different than most Canadian provisions of this type (which merely say "This Act binds the Crown), is:

> This Act binds the Crown in right of New South Wales and, in so far as the legislative power of Parliament permits, the Crown in all its other capacities.

> guaranteeing minimum potable standards for all users, and the procurement of additional standards that are achievable per population served.[218]

The smaller metropolitan suppliers, the Gosford and Wyong Councils operate under the Water Supply Authorities Act 1987. The Act does not establish regulatory arrangements governing their operations, so they are not required to hold an operating licence or to enter into MOUs with NSW Health, the EPA or WAMC, and they are not deemed to have entered into a customer contract. Nor are they subject to annual operational audits. They are subject to price regulation and to licencing requirements for the extraction of water. Probably because of their size and financial ability, metropolitan suppliers comply with the 1996 Guidelines. However, the Wyong and Gosford Councils are not required to meet any particular version of the Guidelines. They do prepare their own plans that require them to meet the 1996 Guidelines. [219]

Non-metropolitan suppliers are separately regulated. The Local Government Act 1993 applies to provision of water supply and sewerage services to country towns as part of the responsibility of local government. These suppliers are subject to price regulation and water extraction licensing requirements.[220]

These smaller suppliers are not required to meet the newest guidelines established at the national level. They are instead encouraged to meet these requirements. Cost is argued to be an issue, since sampling frequency for some parameters has gone from once a month to once a week. Distances in some of the rural areas create a cost issue.[221]

The licensing system has been criticized both in terms of equity and risk management. Specifically, problems include:

- third parties may not be able to intervene or seek information from contractual parties;
- inclusion of health related standards in licences is not consistent
- penalties available for contaminated water may not be flexible or appropriate
- licensing does not provide an equal economic playing field for all water suppliers
- centralization and standardization of data collection and analysis is difficult to achieve under a regional licensing system.
- licences do no provide uniform standards and procedures that could be clearly understood by the general public, they are region and organization specific, leading to unnecessary complexity and lack of clarity

[218] McKay, Jennifer, Anthony Moeller "Is it time for a new model of water quality laws"? Environmental and Planning Law Journal. Vol. 17, i3, p. 165, (June 2000): http://web2.infotrac.galegroup.com/…64446&dyn=6!ar_fmt?sw_aep=mtrl_main, p.5 of 15.
[219] Australian Productivity Commission, p. 204-208.
[220] Ibid, p. 204.
[221] Ibid, p. 208.

- present licences are flexible at the end of their term so their conditions can be easily changed to exclude health and water quality standards without any legal obligation for public consultation or explanative statements elucidating the rationale for such changes.[222]

Monitoring practices are similar for all water suppliers. Compliance monitoring disclosure requirements vary depending on size of supplier. The non-metropolitan areas do not report publicly to the same extent as the large suppliers.[223]

In Sydney, testing is generally done by labs owned by state or federal governments. The Sydney Water Inquiry[224] found that the lab owned by Sydney Water was not sufficiently independent and recommended that an independent testing lab be established and that it provide testing services for all regulatory agencies. These government labs are seen to meet the independence requirement.

Under its MOU with NSW Health (clause 7.5), the Sydney Water Corporation is required to prepare an annual monitoring plan for review and approval by NSW Health. It monitors at every stage of the process: in the catchments and storages, after treatment and in distribution pipes close to consumer taps. Operational monitoring is also required to determine if all processes and equipment are working properly and to allow quick response to malfunctions. [225]

For smaller metropolitan areas and other small suppliers, the only monitoring requirements are those set out in the Guidelines. They are not enhanced by MOU or licence conditions. Limited compliance information is provided through the Water Services Association.

One of the principles used to determine the frequency of sampling is that the level of monitoring should be linked to the number of people at risk. A minimum monitoring requirement is established to protect small communities, but residents of small communities are not required to receive the same level of early warning as those in larger centres.[226]

A NSW Health Department Protocol gives the Chief Health Officer the responsibility for issuing a 'boil water' notice and for deciding when it can be lifted. The MOU with NSW Health requires Sydney Water Corporation to develop a Drinking Water Quality Incident Management Plan to provide for coordinated management of incidents including notice to the public and media communication of health information.

Operational audits are required once a year by the Sydney Water Board (Corporitisation) Act 1994. The Licence Regulator under that Act has part-time members from environmental, consumer, water industry and business interests, including a nominee of the Minister. The Licence Regulator must:

- monitor compliance with the Water Corporation's operating licence conditions;

[222] McKay paper, p. 6 of 15.
[223] Australian Productivity Commission, p. 208.
[224] Third Report, October 1998, Peter McClellan, Q.C.
[225] Australian Productivity Commission, p. 209.
[226] Ibid, p. 229.

- inform the Operating Licence Minister about any failure to meet operational standards or licence requirements; and

- commission an independent annual audit of the Corporation against its licence requirements.

Community right to know:

The *Sydney Water Act* 1994 provides for a licence that establishes, among other things, mechanisms for customer participation. The operating licence also sets out terms and conditions that must be included in a Customer Contract (s.54 (1)) which outlines customers' rights to the supply of water, sewerage and drainage services, consultation, information and assistance, notice of interruption to supply and customer redress.[227]

The Memorandum of Understanding between the Sydney Catchment Authority and the NSW Department of Health, dated 1999 provides that the "Authority will ensure that its customers are adequately informed of the quality of bulk raw water and the appropriateness of any intended uses of such bulk raw water."[228]) The MOU between the Sydney Water Corporation and NSW Health requires that the Water Corporation prepare an annual report on all routine water quality testing results. More interesting, however, is the requirement in the Sydney Water Act, s.101(3), that the Water Corporation publish on the Internet every three months a consumer confidence report on the quality of the water it has on supply for its customers. The report is to include:

- details of the quality and quantity of water in the catchment areas;

- an evaluation of the effectiveness of the Corporation's treatment of water during the immediately preceding three months;

- a review of developments in the literature concerning issues relating to drinking water quality;

- a overview of issues relating to catchment management that were current during the immediately preceding three months; and

- other matters that the regulations may prescribe. (s.101(5))

The Water Corporation also provides daily water testing updates on *Cryptosporidium* and *Giardia* on its web site.[229]

Protection of sources of drinking water:

Drinking water source protection became an issue when the Sydney Water Inquiry found that the water catchments were compromised by sources of contamination and the Water Corporation did

[227] Ibid, p. 201.
[228] See http://www.sca.nsw.gov.au/Info_Reports/memo_index.htm to link to MOU, p. 6, s.5.4.
[229] Ibid, p. 210.

not have sufficient regulatory control of the catchments to guarantee safe drinking water. In response, the NSW government enacted the *Sydney Water Catchment Management Act* 1998. It created the Sydney Catchment Authority which began its operations in July 1999. Among its objectives are the following:

- managing and protecting the catchment areas (both inner and outer and special areas to which access by the public is strictly limited) and catchment infrastructure works. The Water Corporation has established a Special Areas Strategic Plan of Management as a blueprint which redefines best practice for catchment management.

- protecting and enhancing the quality of water taken from catchments;

- undertaking research on catchments generally, and particularly on the health of its own catchments;

- undertaking an educative role within the community on water management and pollution control.[230]

An enhanced monitoring program is also required to assess the likely occurrence of contaminants in the raw water entering the water treatment plants.

The *Sydney Water Catchment Management Act 1998* requires the Catchment Authority to set up a catchment audit within five months of the legislation coming into force.[231] It is to compile indicators and undertake research on the ecological health of the catchments, including vegetative cover, riparian zones and water quality.[232]

Enforcement, Penalties and Compensation

Enforcement is a Health Department responsibility under the Public Health Act 1991, Part 2A. The regulatory powers of the Director-General of NSW Health were strengthened after the Sydney Water Inquiry in 1998 and significant financial penalties have been provided for suppliers who give incorrect information to the public about drinking water safety. The Minister can also require the Corporation to rectify a contravention within a specified period. Although the operating licence can also be cancelled, the Sydney Water Inquiry noted the hypothetical nature of this option given the lack of alternative water providers. Also, the Chief Health Officer has exclusive responsibility for issuing boil water advisories for the two major metropolitan areas.[233]

Rebates to consumers are provided for in the legislation for the two major metropolitan areas. The Independent Pricing and Regulatory Tribunal for New South Wales (IPART) recommended consumer rebates and deferral of a scheduled increase in rates after the suspected *Cryptosporidium* and *Giardia* outbreak in Sydney. These apparently cost the Water Corporation

[230] Ibid, p. 202.
[231] Section 42(1) Sydney Water Catchment Management Act, 1998 and Australian Productivity Commission, p. 202.
[232] Australian Productivity Commission, p. 202.
[233] Ibid, p. 215-216.

a total of A$37 million. Other compensation for businesses was also paid out after claims were made. Rebates are automatic under a voluntary SWC policy when specified service standards are not met.[234]

Compensation may be available through:

- a common law negligence action

- the Trade Practices Act 1974, s. 52 (misleading and deceptive conduct is prohibited); s.71, 74B, 74D (merchantable quality and fitness for purpose); Part VA (different statutory rights, including compensation, for loss caused by defective goods)

- implied customer contracts, so action based on breach of contract (Sydney Water Act 1994 deems a contract between Sydney Water and its customers

- consumer protection under state law (offence provisions and statutory redress provisions).[235]

The deemed customer contract under the *Sydney Water Act 1994* is expressed as follows in s. 55(1):

> An owner of land that is connected to a water main or sewer main owned by the Corporation is taken to have entered into a customer contract with the Corporation, on the terms and conditions set out in the relevant operating licence…

A consumer claims tribunal is created under the Act its jurisdiction extends to the hearing and determination of a consumer claim relating to a service supplied by the Corporation under a consumer contract.[236] Any person may bring proceedings in the Supreme Court for an order to restrain a breach or a threatened or apprehended breach of a consumer contract.[237]

Research, Funding and Technical Assistance

In NSW, the government subsidises capital works to upgrade small systems on equity and public health grounds. IPART, the pricing tribunal (established in 1992 under the Independent and Regulatory Tribunal Act 1992, sets prices to recover the cost of investment to meet current guidelines. It deals with all declared government monopoly services. The government can set prices below, but not above prices recommended by IPART. In making its determinations, it must take into account standards of quality, reliability and safety of the services it is considering. It advertises its investigations, accepts public submissions that are then made available for public inspection, conducts a public hearing for each investigation, conducts public seminars and workshops and submits a public report to the Premier. [238]

[234] Ibid, p. 216-217.
[235] Ibid, p. 350.
[236] The Sydney Water Act, s. 58.
[237] Ibid, s. 103.
[238] Australian Productivity Commission, p. 218-221.

The Minister for Land and Water Conservation provides technical, management and financial assistance through the Country Towns Water Supply and Sewerage Program. As part of its program, it provides advice on infrastructure need to ensure that drinking water quality in country towns meets the Guidelines.[239]

The National Health and Medical Research Council, which sets the national guidelines that may or may not be used in the individual states and territories, is a federal statutory body.

Commentary

Australia's main advantage over Ontario is its initiatives to protect catchment areas, create rights for consumers of water, and provide means for consumers to actually enforce those rights. However, Australia still suffers from many of the problems that Ontario faces. In particular, reporting on water quality is mandatory only if required by an individual water supplier's licence, and there is no centralized database and thus no centrally accessible system.[240]

Although Sydney is quite advanced in its drinking water regime, not much is being done with respect to ensuring that small treatment systems are operating properly or are subject to the same requirements as larger systems. Training is recognized as important in providing safe drinking water, but it is not being provided uniformly, especially for smaller systems. Consumer confidence reporting required by statute is considered a positive step. This reporting relates to the water quality standards or guidelines, however, so if the standards are not adequate the reporting will not be effective.

[239] Ibid, p. 219.
[240] The main source of commentary was Anthony Moeller, Universisty of South Australia, School of International Business, Adelaide, Australia (Anthony.Moeller@unisa.edu.au).

PART III – THE NEED FOR LEGISLATIVE REFORM IN ONTARIO

3.1 Introduction

As described above in Part I of this Paper, the current legal regime for protecting Ontario's drinking water (and its sources) consists of a diverse mix of general legislation, regulation, standards, by-laws, objectives, and guidelines at the federal, provincial and municipal levels.

In some instances, there is overlap between the federal, provincial, and municipal regimes. For example, within their respective jurisdictions, all three levels of government have attempted to control substances or activities that may contaminate groundwater or surface water which serve as sources of drinking water. Thus, the federal government has enacted the *Fisheries Act* and *CEPA 1999* (and regulations thereunder), the provincial government has enacted the *Environmental Protection Act* and *Ontario Water Resources Act* (and regulations thereunder), and municipalities have enacted zoning and sewer use by-laws under the *Municipal Act* and *Planning Act* –which are aimed at a single overarching purpose, *viz.,* to control, reduce or prevent water pollution.

Given the current structure of Canada's Constitution, some degree of legislative overlap is inevitable in broad areas of concurrent jurisdiction, such as the environment and public health. Indeed, some commentators have argued that such overlap may even be helpful or desirable because if one level of government balks at enacting necessary safeguards, then other levels of government have legislative competence to intervene and take appropriate action. This argument has been framed as follows:

> Overlapping federal-provincial legislation can be beneficial. Although this may lead to interjurisdictional squabbles, it also increases the likelihood that either one or the other level of government will engage in action to protect the environment.[241]

Furthermore, ecosystems, including groundwater and surface watercourses, do not neatly conform to political, territorial or jurisdictional boundaries.

Moreover, even if Ontario had (or assumed) exclusive jurisdiction over the environment and public health, there are a number of significant problems in the province's current drinking water regime. For example, there is considerable fragmentation and inconsistency within and between provincial laws, regulations, and policies developed by various ministries and agencies. Such problems are particularly apparent respecting water contamination concerns associated with agricultural operations such as intensive farming and nutrient management, as described below.
Aside from resolving this and other instances of legislative inconsistency, there are also significant legislative "gaps" within Ontario's drinking water regime. Alarmingly, for example, there is no Ontario law that expressly confers or guarantees the public right to clean and safe drinking water. Similarly, Ontario law contains few mechanisms for political or judicial

[241] Webb, "On the Periphery: The Limited Role for Criminal Offences in Environmental Protection", in Tingley (ed.), *Into the Future: Environmental Law and Policy in the 1990's* (Environmental Law Centre, 1990), at page 65.

accountability for drinking water safety at the provincial level, and opportunities for public participation in drinking water standard-setting and approval processes are limited at best. In addition, Ontario law imposes no mandatory duty to identify and evaluate new or emerging threats to drinking water safety, nor does Ontario law mandate comprehensive source water assessment or protection programs.

These and other other legislative shortcomings are compounded by procedural, fiscal and institutional barriers that make it difficult to address drinking water concerns in a unified, systematic manner, as described below.

Thus, while the current legal regime for protecting drinking water in Ontario appears, at first glance, to be complex and comprehensive, a closer examination reveals that despite recent improvements (e.g. O.Reg. 459/00), there are number of remaining weaknesses, flaws, and concerns which require further legislative attention. This is particularly true given the existence of important drinking water provisions which have been passed or proposed in other jurisdictions, but which have not yet been adopted adequately or at all in Ontario.

Accordingly, it is the purpose of this Part of the Paper to undertake a legal analysis of Ontario's current drinking water regime, utilizing the various benchmarks and principles used in Part II of the Paper for the comparative analysis of drinking water regimes in other jurisdictions. Where appropriate, this Part of the Paper offers recommendations for legislative reform to address shortcomings in the current legal framework in Ontario.

It should be noted that the legislative reforms proposed herein are primarily directed at the provincial level. This is not to suggest that the federal government lacks constitutional authority to play an important regulatory role regarding drinking water safety. To the contrary, a strong argument can be made that the federal government has sufficient jurisdiction over public health and the environment to justify the enactment of federal safe drinking water legislation, or, alternatively, nationally binding drinking water standards. Indeed, in the wake of the recent *Cryptosporidium* outbreak in North Battleford, there have been renewed calls for increased federal presence (eg. by amendments to the *Food and Drug Act*) in the regulation of drinking water safety. In the short-term, however, it appears that the federal environment and health ministers are extremely reluctant to move beyond traditional federal activities regarding drinking water (e.g. drinking water guidelines, technical research, infrastructure funding, etc.), and they have cited jurisdictional constraints in support of their position.

Because Ontario cannot invoke constitutional constraints in regulating drinking water safety, the reforms proposed herein are aimed at the province. In fact, Ontario is already extensively involved in drinking water matters, but the legal analysis below suggests that legislative reform is necessary in order to ensure effective, efficient and enforceable protection of drinking water and its sources across the province.

3.2 Analysis of Current Legal Regime in Ontario

(a) General

While federal environmental laws and policies apply within Ontario, the key components of the current legal regime exist primarily at the provincial level. Thus, the remainder of this Paper will focus on the strengths, weaknesses, and opportunities for reform within the provincial drinking water regime. This is not to suggest that federal laws or policies are insignificant or irrelevant for the purposes of protecting drinking water quality and quantity. However, given that water resource management and public health protection have largely evolved as matters of provincial jurisdiction, it is both timely and imperative to assess the adequacy of Ontario's current legal regime.

Having regard for the various elements of Ontario's legal regime, it is possible to make some general observations and draw some overall conclusions about the nature, scope and content of the current regulatory framework.

For example, it is readily apparent that Ontario's water-related provisions are not integrated or consolidated within a single statute or regulation. To the contrary, such provisions are scattered across a number of different statutes and regulations that are administered by different ministries, agencies or institutions whose mandates, resources, and degrees of expertise in drinking water matters vary greatly. For example, water resource management is generally carried out in Ontario by the MOE under the auspices of the OWRA, although the MOE also administers regulations related to water quality generally under the EPA (e.g. MISA effluent standards).

At the same time, however, activities or undertakings which can adversely affect drinking water quality or quantity may be subject to the jurisdiction of any number of ministries, agencies or institutions, such as: the MOE (e.g. the *Environmental Assessment Act*); the MNR (e.g. the *Public Lands Act, Lakes and Rivers Improvement Act*, or *Aggregate Resources Act*); the Ministry of Agriculture, Food and Rural Affairs (e.g. the *Drainage Act*); the Ministry of Municipal Affairs and Housing (e.g. the Provincial Policy Statement under the *Planning Act*); the Ministry of Consumer and Commercial Relations (e.g. the *Gasoline Handling Act*); conservation authorities (e.g. floodplain regulations under the *Conservation Authorities Act*); and municipalities (e.g. by-laws under the *Municipal Act* or *Planning Act*).

It goes without saying that this multi-jurisdictional regime is not necessarily conducive to ensuring a unified and consistent approach to the long-term sustainable management of Ontario's water resources.[242] This is particularly true in relation to groundwater management:

> In summary, the current legal and policy framework for groundwater management is best characterized as fragmented and uncoordinated. The ministries do not have a publicly recognizable strategy that spells out how priorities are to be set and how ministries can coordinate their efforts and

[242] Generally, see McCulloch and Muldoon, *A Sustainable Water Strategy for Ontario* (CELA, 1999), and McClenaghan and Miller, *Submissions to the Water Resource Management Committee regarding Devlopment of a Long-Term Strategic Water Policy Framework in Ontario* (CELA, 2000): <http://www.cela.ca>.

> work with all stakeholders to address the conflicting goals contained in different laws and policies.[243]

In the discrete matter of communal drinking water, the MOE has assumed the role of lead agency pursuant to the OWRA and regulations thereunder (e.g. Regulation 903, O.Reg.435/93, and O.Reg. 459/00). There are, however, a number of other players (e.g. public utility commissions or medical officers of health) and different statutes (e.g. *Public Utilities Act* or *Health Promotion and Protection Act*) which are directly relevant to the delivery of drinking water at the local level. Indeed, it is the *Public Utilities Act* (whose administration has not been assigned to the MOE or, indeed, any other ministry) that specifically prohibits the deposit of injurious materials into waterworks (section 13).

The net result is a complex, convoluted and generally uncoordinated legislative regime, both for water management in general and drinking water in particular. The highly fragmented nature of the current provincial regime is contrary to the objectives of accountability, transparency, and avoidance of shared responsibility. To avoid unnecessary confusion or duplication, Ontario should expressly clarify jurisdictional roles, duties and responsibilities of the various officials and entities involved in drinking water quality and quantity. While this may be achieved through different means, Ontario should consider consolidating drinking water provisions (and related regulations and policies) into a single, integrated statute that deals solely with drinking water matters.

As described in Part I of this Paper, the concept of a special *Safe Drinking Water Act* is not new in Ontario, and, in fact, such legislation has been proposed on numerous occasions since the early 1980s by individual legislators as well as public interest organizations. It should be noted, however, that consolidating drinking water requirements into a single statute does not dispense with the need for other environmental laws and regulations of general application, such as the EPA or OWRA.

Ideally, a comprehensive drinking water statute would eliminate the current need for interested parties (e.g. drinking water regulators, suppliers and consumers) to obtain and review the voluminous (and often disparate) array of laws, regulations and policies described in Part I of this Paper. In this sense, a specialized statute would provide a "one-window" compendium of drinking water requirements for all interested parties. Consolidation also offers an important opportunity to clarify, improve and coordinate drinking water requirements, which, in turn, may enhance investigation and enforcement capability.

It is noteworthy that other jurisdictions have passed or proposed specialized drinking water statutes, rather than attempt to address drinking water through environmental laws of general application. For example, the U.S. enacted the specialized SDWA rather than amend or expand other general environmental laws (e.g. *National Environmental Policy Act, Clean Water Act,* or *Toxic Substances Control Act*) to include drinking water matters. Similarly, British Columbia has recently enacted the *Drinking Water Protection Act* (Bill 20) as part of its "Drinking Water Protection Plan", as described above in Part II of this Paper.

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[243] Environmental Commissioner of Ontario, *The Protection of Ontario's Groundwater and Intensive Farming: Special Report to the Legislative Assembly of Ontario* (ECO, 2000), at page 6.

At the very least, the passage of a separate, stand-alone drinking water statute would heighten the profile and priority of ensuring drinking water quality in Ontario. It would also represent a tangible and highly visible statement of the government's commitment to safe drinking water. Otherwise, addressing drinking water matters via *ad hoc* regulations under a statute that is over 40 years old (eg. the *Ontario Water Resources Act*) tends to diminish the importance of drinking water safety, and does not represent the optimum level of protection for this fundamental value.

Assuming that Ontario's drinking water provisions are consolidated within a single statute, there are a number of other legislative provisions and policies which are inconsistent (or conflict) with the paramount objective of protecting drinking water and quality.

For example, although disposal of animal wastes can pose serious risk to drinking water quality,[244] Ontario's EPA contains several exemptions for this activity (e.g. sections 6(2), 13(2), 14(2), and 15(2)), provided that animal waste disposal is carried out in accordance with "normal farming practices". Although municipalities may attempt to address animal waste disposal through "nutrient management" by-laws, the *Farming and Food Production Protection Act, 1998* provides that "no municipal by-law applies to restrict a normal farm practice carried on as part of an agricultural operation" (section 6(1)).[245]

Further examples of inconsistency regarding water resources may be found in the province's land use planning regime under the *Planning Act*. While the current Provincial Policy Statement ("PPS") directs municipalities to protect water quality and quantity (Policy 2.4.1), this policy does not supercede or take precedence over other policies set out in the PPS, such as providing "sufficient land for industrial, commercial, residential, recreational, open space and institutional uses to promote employment opportunities" (Policy 1.1.2), or ensuring "long term economic prosperity" by providing "that infrastructure and public service facilities will be available to accommodate projected growth" and "providing a supply of land to meet long term requirements" (Policy 1.1.3). The PPS provides little guidance to municipalities on how these often-incompatible objectives are to be resolved in cases of conflict. Even if such guidance existed, it should be further noted that the *Planning Act* merely requires municipalities to "have regard" for these pronouncements of provincial policy. Thus, the permissive nature of the PPS, and the considerable municipal discretion in applying PPS policies, makes it difficult to ensure long-term protection of water quality and quantity under the current land use planning process.

At the very least, these and other examples of inconsistency should be formally revisited and, where necessary, revised and/or revoked to ensure consistency with the provincial objective of protecting drinking water quality and quantity across Ontario.

Even if the above-noted formal review is undertaken, such a review may not necessarily identify and remedy all actual or potential cases of conflict with the provisions of Ontario's drinking

[244] See, for example, Environmental Commissioner of Ontario, *The Protection of Ontario's Groundwater and Intensive Farming: Special Report to the Legislative Assembly of Ontario* (ECO, 2000), at page 9.
[245] *Farming and Food Production Protection Act, 1998*, S.O. 1998, c.1. The Walkerton Inquiry has received testimony indicating that such provisions make it difficult for municipalities to protect drinking water sources from agricultural runoff: see the Part 1A testimony of Mr. David Thomson and Dr. Goss.

water regime. To safeguard against this possibility, it would be prudent to include a paramountcy clause in the provincial drinking water statute. This clause should be in addition to a purpose statement that entrenches the acknowledged public priority of ensuring safe drinking water for all Ontarians, as described below.

In essence, a paramountcy clause would provide that where there is conflict between drinking water provisions and any general or special Act (or regulations), the drinking water provisions prevail to the extent of the conflict. Incredibly, it appears that the OWRA lacks such a paramountcy clause. However, an example of a paramountcy clause is found in the SDWA (Bill 96) recently proposed as a private member's bill by Ms. Marilyn Churley MPP:

> In the event of conflict between any provision of this Act or the regulations made under it, and a provision of any other Act or regulation, this Act and the regulations made under it prevail (section 17).

Aside from the issue of paramountcy, it should be noted that most of Ontario's current drinking water requirements are set out in the form of subordinate regulation (e.g. Regulation 903, O.Reg. 435/93, and O.Reg. 459/00), rather than in legislative form (e.g. OWRA).

For investigation and enforcement purposes, regulations are binding and legally enforceable instruments, and are therefore preferable to policies, objective, manuals or guidance documents. In addition, regulations offer a degree of flexibility in the sense that it can be relatively easier and quicker to amend or update regulations to take into account new information, emerging technologies, or material changes in circumstances.

Nevertheless, there are a number of serious concerns about relegating most substantive drinking water provisions to mere regulation -- or accompanying guidance documents[246] -- rather than legislation.

Once enacted, for example, legislation generally enjoys a high degree of permanence and longevity, primarily because parliamentary procedures[247] must be observed before legislation can be amended or repealed. Such procedures typically result in considerable public, media, and political scrutiny of proposed legislative amendments or repeals. In addition, to promote long-term stability and predictability, legislatures are generally reluctant to completely overhaul or repeal existing legislation unless there are compelling public policy reasons to do so.

Regulations, on the other hand, are generally not subject to rigorous public or parliamentary oversight. In some instances, regulations can virtually disappear at the stroke of a pen with little or no public input. As noted above, the *Environmental Bill of Rights* has attempted to make environmental regulation-making in Ontario more open, accessible and transparent. Nevertheless, the Environmental Commissioner of Ontario has found many examples of

[246] For example, while section 13 of O.Reg.459/00 requires the periodic submission of "engineer's reports", the actual scope and content of such reports are not specified in the regulation but in a MOE technical publication entitled "Terms of Reference for Engineer's Reports for Water Works", as may be amended from time to time.
[247] For example, First, Second and Third Reading debate (with possible referral to committee); Royal Assent; and proclamation into force.

environmentally significant regulations that were made, amended or repealed with little or no opportunity for public review and comment.[248]

Indeed, the Drinking Water Protection Regulation itself was subject to negligible public notice and comment opportunities. For example, notice of the proposal was first posted on the EBR Registry as an "emergency exception" on May 31, 2000.[249] The proposed text of the regulation was not made available to the public at that time, nor was a Regulatory Impact Statement prepared by the MOE. Instead, the EBR Registry notice claimed that "urgency" prevented a full 30-day comment period, but indicated that public input would be accepted until June 6, 2000 – a mere six days after the notice was first posted. After this "comment period" closed, no further opportunities for public review and comment were provided until the actual regulation was released and proclaimed in force in August 2000.[250] Thus, despite the urgency claimed by the MOE, it actually took close to three months to finalize and publish the regulation – a timeframe which would have permitted ample opportunity for more effective public consultation. Clearly, there was a compelling public interest need for this overdue regulatory initiative, but it remains doubtful whether it was necessary to dispense with meaningful comment opportunities on the new regulation.

In any event, the questionable origin of the Drinking Water Protection Regulation illustrates the often inaccessible (if not secretive) manner in which regulations may be unilaterally made, amended or repealed in Ontario. This practice stands in stark contrast to the much more public process involved in making, amending or repealing statutes, as described above.

Another concern about using regulation rather than legislation centres on the fact that most regulations are ultimately approved by Cabinet, not the Legislature. Thus, regulations often reflect only the priorities or policies of the governing political party, rather than the Legislature as a whole or the public at large. This concern has been summarized as follows:

> …[R]egulations are prepared by civil servants, often in closed-door consultation with the regulated industry, and rarely in consultation with the affected public or public interest groups that represent them. Regulations are approved by Cabinet. Unlike statutes, they do not pass through Parliament or the provincial legislature, where MPs and MPPs can criticize them and propose amendments. So the final version reflects only the views of the party in power, not the views of the opposition parties or the general population.[251]

Given the profound public interest in ensuring drinking water safety, a strong argument can be made that wherever possible, substantive drinking water provisions should be entrenched in legislation rather than regulation. In general, fundamental drinking water principles, rights, obligations and remedies should be codified into law, thus providing a clear framework for any

[248] These examples are described in virtually every Annual Report released by the Environmental Commissioner.
[249] EBR Registry No. RA00E0014. Generally, see Lindgren, *Submissions of the Canadian Environmental Law Association to the Director, Standards Development Branch (MOE) regarding the Proposed Drinking Water Regulation* (CELA, June 6, 2000).
[250] EBR Registry No. RA00E0020.
[251] Estrin and Swaigen (eds.), *Environment on Trial (3rd ed.)* (Emond Montgomery, 1993), at page 11.

regulations that are needed to implement the statutory regime. If the primary justification for having regulations is the need for flexibility, finetuning, and technical updating, then regulations should be confined to matters that will likely change frequently, and should be drafted and evaluated on that basis.

If drinking water requirements are left largely in regulatory form, such requirements remain constantly vulnerable to the unpredictable vagaries of the political process, particularly since incoming governments can virtually change or abolish regulations overnight with little or no public consultation. In contrast, legislation tends to be more permanent in nature, and proposed legislative changes are processed in much more open, accessible and transparent manner than regulations.

Even if Ontario enacts a special *Safe Drinking Water Act*, there is still a role for detailed regulations to fine-tune or implement statutory requirements. In other words, the enactment of a *Safe Drinking Water Act* may diminish – but not dispense with – the need for prescriptive regulations. Nevertheless, for the reasons stated above, drinking water provisions should, to the greatest possible extent, be entrenched in law in order to maximize their legal weight, significance, and long-term survival.

RECOMMENDATION #1: Ontario should, to the greatest possible extent, entrench drinking water provisions into a single, integrated statute, rather than in regulation or policy. This statute should contain a paramountcy clause that provides that in cases of conflict between drinking water provisions and any other general or special Act, the drinking water provisions shall prevail to the extent of the conflict.

RECOMMENDATION #2: Ontario should systematically review and, where necessary, revise provincial laws, regulations and policies to ensure that they are consistent with the overall provincial priority of protecting drinking water and its sources.

(b) Accountability

Accountability Principles and Mechanisms

It is widely accepted that ministries, agencies and institutions should be accountable for their environmental decision-making. In fact, enhancing governmental accountability for environmental decision-making in Ontario was an important policy objective which led to the passage of the *Environmental Bill of Rights, 1993.*[252] However, there are mixed views as to whether the EBR has actually achieved the level of governmental accountability anticipated by the drafters of the EBR.[253]

[252] Muldoon and Lindgren, *The Environmental Bill of Rights: A Practical Guide* (Emond Montgomery, 1995), Chapter 5.

[253] For example, it has been suggested that the considerable discretion conferred upon various Ministers under the EBR mitigates against full accountability: see Castrilli, "Environmental Rights Statutes in the United States and Canada: Comparing the Michigan and Ontario Experiences" (1998), *Villanova Env. L.J. (Vol IX, Issue 2)*, at pages 435 to 436.

For accountability purposes, institutional arrangements under a statutory regime should reflect or incorporate a number of important principles, such as:

- clearly delineated areas of jurisdictional responsibility;
- avoidance of conflicting objectives or mandates;
- avoidance of shared or fragmented responsibility;
- single-point accountability (e.g. accountable only to a single entity or official);
- provision of sufficient resources to accomplish assigned duties;
- open, transparent processes for decision-making;
- clear criteria to guide decision-making;
- effective review and appeal mechanisms;
- requirement to monitor and report outcomes; and
- responsiveness to changing demands, trends or risks.[254]

These principles may be implemented through political accountability mechanisms, judicial accountability mechanisms, or a combination thereof.[255] Political accountability mechanisms include, for example, statutory provisions which mandate annual reports by ministries to the Legislature (or a Standing Committee), require periodic ministerial statements (e.g. "State of the Environment" addresses), or establish an independent office (or auditor) to provide objective oversight and regular reports. Judicial accountability mechanisms include provisions which create new statutory causes of action, permit judicial review of ministerial non-performance of mandatory duties, or allow public access to the civil courts to address unlawful conduct (e.g. citizen suit provisions).

Accountability for Drinking Water in Ontario

While the MOE has primary responsibility for administering Ontario's drinking water regime, there are few, if any, accountability mechanisms built into either the OWRA or the regulations thereunder.

With respect to political accountability, for example, there is no provision in the OWRA which requires the MOE to report annually (or at all) to the Legislature (or a Standing Committee) on matters related to drinking water quality or quantity. Similarly, the Minister is not statutorily obliged to table annual "State of Ontario's Drinking Water" Reports which discuss statistical

[254] These principles are derived from the Australian Productivity Commission, *Arrangements for Setting Drinking Water Standards: International Benchmarking* (April 2000), page 8, Attachment 1A.
[255] EBR Task Force, *Report of the Task Force on the Ontario Environmental Bill of Rights* (MOE, 1992), at page 66.

summaries (e.g. quarterly reports filed by drinking water suppliers); number and nature of exceedances of health-based parameters; trends respecting orders, approvals or prosecutions; or emerging issues or challenges regarding the MOE's drinking water program.[256] In addition, there is no independent "Office of Drinking Water Safety" to oversee or report upon the MOE's drinking water program. The absence of such mechanisms clearly diminishes the political accountability of the MOE for its decision-making in the provincial drinking water regime.

With respect to judicial accountability, the OWRA simply provides that the Act binds the Crown (section 2). However, the OWRA does not contain a statutory cause of action for harm or loss arising from contraventions of drinking water provisions or regulations. Similarly, the OWRA does not impose any mandatory duties upon the Minister (e.g. to set, review, amend or enforce contaminant standards), and does not include any judicial review provisions. In addition, the OWRA does not contain a citizen suit provision that allows Ontarians to seek redress in civil court for contraventions of drinking water standards. Again, the absence of such mechanisms clearly diminishes the judicial accountability of the MOE for its decision-making in the provincial drinking water regime.

As noted in Part I of this Paper, the MOE recently conducted an internal review of whether there is a need for a *Safe Drinking Water Act* in Ontario. This review was carried out in response to a formal application filed by CELA and other applicants pursuant to Part IV of the EBR. In late October 2000, the MOE completed its review of its own drinking water regime, and concluded that a *Safe Drinking Water Act* was not needed in Ontario.[257] With respect to judicial accountability concerns raised by CELA and other applicants, the MOE simply noted that "anyone affected by a statutory power of decision may apply for judicial review of that decision".[258]

As a general proposition of law, this MOE statement is correct, but it begs the fundamental question of whether, for example, one can seek judicial review of a ministerial failure or refusal to establish new contaminant standards, or to review the adequacy of existing standards within a prescribed timeframe or frequency. Under the OWRA, there is no mandatory duty upon the Minister to establish, review or amend any drinking water standards at all, as discussed below. Given the permissive nature of the regulatory powers under the OWRA,[259] the establishment, review or amendment of drinking water standards is entirely discretionary, and an order of *mandamus* would not lie against the Minister under the *Judicial Review Procedure Act*. Indeed, the MOE could, in theory, repeal O.Reg. 459/00 and turn the drinking water standards back into non-enforceable Ontario Drinking Water Objectives, and even this significant rollback would not be judicially reviewable in court. Accordingly, the mere existence of the *Judicial Review Procedure Act* does not address concerns about the OWRA's failure to impose mandatory (and enforceable) duties upon the Minister in relation to drinking water standards.

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[256] Currently, the MOE reports on its Drinking Water Surveillance Program, and publishes other drinking water information. However, these *ad hoc* reports are largely done on discretionary basis, since there is nothing in the OWRA that actually requires the MOE to compile and publish these reports.

[257] H. Wong, Water Policy Branch (MOE), dated October 30, 2000.

[258] *Ibid.*, page 4.

[259] Section 75(1)(i) of the OWRA provides that Lieutenant Governor in Council "may" make regulations "prescribing standards of quality for potable or other water supplies". This enabling provision has existed within the OWRA for years, but no drinking water quality regulations were made until August 2000 (O.Reg.459/00).

Similarly, the MOE has noted that "under specific circumstances, the EBR legislation itself also provides a right to sue for harm to a public resource".[260] Again, this proposition is correct in law, but it does not address concerns about judicial accountability under the OWRA. First, it should be noted that the new cause of action under section 84 of the EBR is intended to protect "public resources", not drinking water from communal waterworks.[261] Second, even if the section 84 cause of action applied to drinking water *per se*, Part VI of the EBR imposes numerous conditions precedent and procedural requirements,[262] which likely explains why only one section 84 lawsuit has been brought to date in Ontario. Accordingly, one must question whether such lawsuits would be used widely by Ontarians to address local problems, even if section 84 did apply to drinking water.

The MOE's apparent refusal to consider the need for further accountability mechanisms in the OWRA stands in contrast to the trend in other jurisdictions which have seen fit to establish a variety of political and judicial accountability mechanisms. For example, the U.S. *Safe Drinking Water Act* requires annual public reports by the Environmental Protection Agency, and which create judicial review opportunities for non-compliance with duties imposed by the Act, as discussed below.

Unless and until such mechanisms are incorporated into Ontario law, the current drinking water regime seems to impose accountability only upon drinking water suppliers, who must comply with the Drinking Water Protection Regulation (eg. treatment, monitoring and reporting). The Minister of the Environment, on the other hand, has no mandatory legal duty to do anything in relation to drinking water, and is not statutorily obliged to monitor or report upon drinking water matters at the provincial level.

While local accountability is undoubtedly important, provincial oversight and overall regulatory responsibility is critical to ensuring drinking water safety across Ontario. At a minimum, in order to fully implement the multi-barrier approach, Ontario must develop and oversee a number of provincial standards that:

- require local authorities to develop and implement source water assessment and protection programs;

- regulate well siting, infrastructure, maintenance, repair, and other operational aspects of drinking water treatment and distribution;

[260] H.Wong, f.n. 17, page 4.
[261] As noted in Part I of this Paper, the EBR is intended to address the natural environment, rather than social, cultural, economic or indoor environments.
[262] For example, before commencing an EBR action, plaintiffs must generally file an Application for Investigation and await a governmental response that is either unreasonable or untimely. Special procedural rules (eg. public notice of action; service upon Attorney General; application to Farm Practices Protection Board; public interest stay, etc.) and special defences (eg. statutory authority and mistaken interpretation of an instrument) are also codified in Part VI of the EBR.

- specify monitoring and reporting requirements in relation to source water and delivered water;

- require treatment of surface water and groundwater (including continuous, site-specific determinations of whether groundwater is subject to influence by surface water);

- empower regulatory officials to issue binding orders to require immediate action to address problems regarding source water or delivered water;

- regulate the development and content of emergency response, contingency plans, and communication plans where unsafe drinking water is detected;

- establish the nature and frequency of inspections by regulatory officials;

- regulate laboratory accreditation, certification, testing and training requirements (including performance audits to ensure compliance);

- require operator and agency training and professional development (including performance audits to ensure compliance);

- establish requirements for public reporting on drinking water matters at the provincial and local level; and

- require the prioritization, undertaking, and dissemination of research on new technology, emerging pathogens, and related drinking water matters.

To date, only limited progress on the foregoing measures has been achieved, largely under the Drinking Water Protection Regulation. Ideally, these measures should be consolidated under the auspices of specialized drinking water legislation so that all parties – regulatory officials, drinking water suppliers, and members of the public – know exactly what is required (and by whom) for the purposes of implementing the multi-barrier approach to drinking water safety.

Nevertheless, simply asserting that provincial role should be strengthened and entrenched in law begs the question of which Ontario ministry or agency should be given the primary responsibility for overseeing the implementation of the drinking water regime.

As noted above in Part II of this Paper, British Columbia's Ministry of Health has considerable responsibility under that province's drinking water regime. Most other jurisdictions, however, have tended to rely upon environmental ministries or departments for ensuring drinking water quality and quantity. This has traditionally been the approach used in Ontario, and there are strong arguments for retaining the Ministry of the Environment as the lead agency for the province's drinking water program.[263] At the same time, other public bodies (eg. municipalities, medical officers of health, public utilities, and conservation authorities) should continue to play

[263] See, for example, OPSEU, *Renewing the Ministry of the Environment: Submission by OPSEU to the Walkerton Inquiry* (April 27, 2001).

their related roles under their respective statutes, as may be amended by safe drinking water legislation.

Having said this, it does not necessarily follow that the Ministry should continue to deliver the drinking water program through its existing institutional structure and administrative arrangements. On this point, it should be noted that other jurisdictions have passed or proposed legislative provisions that create and empower drinking water officials, or that create specialized drinking water agencies or institutions. New Jersey, for example, has established the Bureau of Safe Drinking Water within the Department of Environmental Protection. This Bureau is responsible for for all state-level programs and activities required under the federal *Safe Drinking Water Act*.

Similarly, the B.C. Auditor General's 1999 report advocated the creation of a single lead agency for protecting drinking water, primarily on the grounds that drinking water protection should not be handled as a sub-component of a broader mandate given to generalist ministries. In response, B.C.'s recently enacted *Drinking Water Protection Act* requires the health and environment ministers to each appoint "provincial drinking water coordinators", who are required to jointly establish guidelines and directives to be considered by officials acting under the legislation. The two coordinators are also required to prepare and deliver annual reports to the health minister, who, in turn, was obliged to file the reports with the Legislature. Interestingly, the B.C. law also proposes a new official known as "drinking water officer". Among other things, these officers would be empowered to receive and act upon notices of adverse water quality; order water source/system assessments; require assessment response plans; issue hazard abatement/prevention orders; issue "contravention" orders directing persons to remedy non-compliance with the Act or regulations; and take his/her own direct action to address drinking water health hazards.

Likewise, England has established the independent Drinking Water Inspectorate in 1990 pursuant to the *Water Industry Act*. While England's Environment Agency continues to have general responsibility for environmental protection (including freshwater resources), the Drinking Water Inspectorate is staffed by specialists and focused solely on drinking water. Among other things, the Inspectorate undertakes inspections to ensure that treatment and monitoring requirements are carried out by water suppliers. The Inspectorate also undertakes enforcement measures (pursuant to its *Code of Enforcement*), implements research programs (especially in relation to *Cryptosporidium*), and plays a major role in standard-setting and regulation-making. The English experience under the Drinking Water Inspectorate has prompted Australia's Office of the Regulator-General (Victoria) to advocate creation of a similar specialized agency, as described above in Part II of this Paper.

Having regard for these intiatives in other jurisdictions, a strong argument can be made that it is time for Ontario law to create a statutory "Drinking Water Commission" (reporting to the Minister of the Environment) to develop and oversee the implementation of Ontario's drinking water program. If such a Commission is created, Ontario would not be breaking new ground, but would simply be following the lead established by other jurisdictions.

Indeed, it should be noted that the concept of a specialized water commission is not unprecedented in Ontario. In particular, the Ontario Water Resources Commission was established by law in the late 1950's. It reported to the Department of Health (since the MOE was not yet in existence), and possessed a number of important water-related functions and regulatory responsibilities.[264]

Over its fifteen year history, the Ontario Water Resources Commission served as an independent body that, among other things, undertook annual inspections of waterworks, provided financial and technical assistance, developed water testing procedures, established and operated laboratory services, and developed training and certification programs. In 1972, the Ontario Water Resources Commission was consolidated with other governmental departments to form the Ministry of Environment, which was a given a broad mandate to protect the air, land and water of Ontario (not just drinking water). Accordingly, the Ontario Water Resources Commission provides an important model for current discussions about the delivery of Ontario's drinking water program.

It could be suggested a new Drinking Water Commission is redundant since the Ontario Clean Water Agency ("OCWA") already exists as a Crown agency, and is extensively involved in water and sewage services across the province. It is for this very reason, however, that OCWA would not be an appropriate substitute for the Commission recommended herein. Since OCWA provides water services for many municipalities on a contractual basis, it is not in a position to "self-police" itself or to otherwise serve as the provincial regulator of drinking water safety. The fact that OCWA has also been considered as a candidate for privatization makes it even less likely to serve as a regulatory body.

It could be further suggested that the new Drinking Water Commission is redundant since the Ministry of Environment already has jurisdiction and staff to protect drinking water in Ontario. However, it should be further noted that the Ministry of Environment has numerous other statutes, regulations and programs to administer across the province. Similarly, evidence at the Walkerton Inquiry suggests that the actual time spent by Ministry staff on the communal water program has traditionally been small compared to the other components of the Ministry's overall mandate to safeguard the air, land and water of Ontario. This situation has been exacerbated by recent staff and budget cuts which have made it even more difficult for the Ministry to fully and properly administer its communal drinking water program. However, even if funding and staffing were restored to their pre-existing levels, the fact remains that drinking water is one of several competing demands on staff time and availability. Put another way, restoration of Ministry budgets and staffing is undoubtedly important, but it does not necessarily address the need to have a single-purpose agency whose only priority and mandate is drinking water safety in Ontario.

In order for the Drinking Water Commission to be effective, the drinking water statute must ensure that the Commission has adequate legal authority, sufficient staffing and resources, and independence from other governmental employees and officials, particularly those involved in land use and resource development decisions. For the purposes of political accountability,

[264] *Ontario Water Resources Commission Act, 1957*, S.O. 1957, c.88. Generally, see Ontario Sewer and Watermain Construction Association, *Drinking Water Management in Ontario: A Brief History* (January 2001), at pp.3-7.

however, the statute should provide that the Commission reports directly to the Minister of Environment, who, in turn, shall immediately table the Commission's reports before the Legislature.

In general, the Drinking Water Commission should be headed by a Commissioner appointed to five year renewable terms in order to ensure continuity, consistency and independence from election cycles. The Commission's staff should include dedicated inspectors, who may be drawn from current (or former) Ministry employees with training and experience in drinking water matters. Core funding should be guaranteed by law, and must be at a level sufficient to enable the Commission to carry out its duties and functions imposed by the safe drinking water statute.

The principal mandate of the Drinking Water Commission should be to assume and expand the drinking water program presently administered by the Ministry of Environment. Among other things, the drinking water statute should require the Commission to develop (with full public input) provincial standards on all components of the multi-barrier approach, as discussed above (eg. source assessment/protection, infrastructure, treatment, monitoring, reporting/notification, remedial action, contingency planning, inspection, operator training/certification, laboratory accreditation, research, etc.). Creating such a Commission would help reduce the excessive fragmentation that currently plagues the existing legal regime, and would assist in enhancing accountability and avoiding shared (or diffuse) responsibility for drinking water safety.

The creation of a specialized Drinking Water Commission would not necessarily displace other public officials who currently play a role in protecting drinking water quality or quantity. For example, medical officers of health should continue to exercise their jurisdiction under the *Health Protection and Promotion Act*. However, overarching responsibility for Ontario's drinking water program should be statutorily vested in the Drinking Water Commission, with other agencies and officials providing a backup system of "checks and balances" to ensure that localized problems are quickly identified and remediated. It goes without saying that to make this system workable, the drinking water statute must clearly delineate the lines of authority, responsibility and communication between the Commission and other officials involved in drinking water protection in Ontario.

In summary, Ontario's current legal regime generally imposes no mandatory duties upon the Ministry of Environment in relation to provincial standards, monitoring and reporting on drinking water matters. In addition, the current regime generally leaves provincial monitoring and reporting issues by default to Environmental Commissioner of Ontario and/or the Provincial Auditor. While these independent offices can and do play important auditing and reporting functions, neither office has any particular expertise in drinking water matters. Moreover, the annual reports generated by these offices tend to catalogue -- not stop or reverse -- poor or questionable governmental decisions regarding the environment and public health.

Accordingly, if Ontario enacts safe drinking legislation as proposed in this Paper, then the statute must include a number of political and judicial accountability mechanisms (eg. provincial reporting and judicial review opportunities) in order to ensure drinking water safety. It goes without saying that such a statute should expressly bind the Crown. In addition, while the Minister of the Environment should continue to have ultimate responsibility for Ontario's

drinking water program, there are compelling reasons why the drinking water statute should create a specialized Drinking Water Commission to develop and oversee the implementation of drinking water standards and requirements. The drinking water statute should also clearly articulate lines of authority, responsibility, and communication between the various public officials who are involved in protecting drinking water (and its sources) and public health in Ontario.

An example of such a specification of roles, which should be set out in the statute, is in Table 1 below, titled "Example of Potential Assignment of Roles in a Multi-Barrier Safe Drinking Water System."

RECOMMENDATION #3: Ontario's drinking water statute should include provisions that:

(a) establish appropriate judicial and political accountability mechanisms, such as provincial monitoring/reporting and judicial review opportunities;

(b) specify that the statute binds the Crown;

(c) establish an new "Drinking Water Commission" that reports to the Minister of Environment, and that has the statutory mandate to develop and oversee the delivery of Ontario's drinking water program by (among other things) setting and enforcing provincial standards which implement the multi-barrier approach; and

(d) clearly delineate lines of authority, responsibility and communication requirements between Ministry staff, the Drinking Water Commission, municipal officials, public utilities, and medical officers of health.

(c) Application of Legal Regime

If Ontario enacts a single, comprehensive drinking water statute, there are a number of key implementation questions that must be answered. For example, should the drinking water statute apply only to public suppliers of drinking water (e.g. municipalities or public utility commissions), or should it also apply to private suppliers of drinking water (e.g. subdivisions or campgrounds)? Should drinking water requirements apply only to waterworks over a certain threshold (e.g. five or more service connections, or serving 25 or more people), or should they apply equally to all waterworks regardless of size? Finally, should individual private wells be subject to drinking water requirements imposed by law?

To answer these and related questions, it is instructive to review the current application of Ontario's Drinking Water Protection Regulation (O.Reg. 459/00). As described above in Part I of this Paper, this new Regulation only applies to water treatment or distribution systems that require waterworks approvals under section 52(1) of the OWRA.[265] In addition, the Regulation specifies that it does not apply to systems that supply 50,000 litres of water or less on at least 88

[265] Note that section 52(8) exempts a number of different waterworks from the requirement to obtain a section 52(1) approval: *Ontario Water Resources Act*, R.S.O. 1990, c.o.40, section 52(8).

Table 1. Example of Potential Assignment of Roles in a Multi-Barrier Safe Drinking Water System

Multi Barrier Item	Primary Delivery of This Barrier	Establishment of Requirements for this Barrier	Oversight Responsibility
A. Source Protection (including planning and development decisions)	Local municipalities & conservation authorities	Provincial standards and requirement for local authorities to establish source protection per the standards – Provincial Drinking Water Commissioner (reporting to the Minister of the Environment)	
B. Drinking Water delivery (wells, pipes)	Local municipalities & public utilities	Provincial standards for infrastructure, well siting & maintenance etc. and requirement for local authorities to ensure compliance – Provincial Drinking Water Commissioner	Ministry of Environment to ensure compliance
C. Monitoring (source water and delivered water)	Local municipalities and public utilities	Provincial standards for monitoring & reporting – Provincial Drinking Water Commissioner	Auditing by local medical officer of health and by MoE/ Drinking Water Commissioner; Ability of both to require action; specified communication among the agencies in case of adverse results. Regional and provincial scale review of results by Drinking Water Commissioner to identify issues in specific communities or regions
D. Treatment	Local municipalities and public utilities	Provincial standards for treatment according to specified conditions, including continuous examination of whether "groundwater" is subject to surface water influence – Drinking Water Commissioner	Ministry of Environment & Medical Officers of Health
E. Fix any Problems in source, treatment or delivery	Local municipalities and public utilities		Powers to make orders: Ministry of Environment & Medical Officers of Health
F. Emergency Response	Local municipalities and public utilities to have the plans and act on them, including contingency plans and communications plans	Provincial standards as to content of plans – Drinking Water Commissioner	Additional powers to initiate operation of plans or aspects of them: Medical Officer of Health; Ministry of Environment

Multi Barrier Item	Primary Delivery of This Barrier	Establishment of Requirements for this Barrier	Oversight Responsibility
G. Inspection	Dedicated Inspectors – Ministry of Environment; Follow up and ensuring compliance with deficiencies – Ministry of Environment; If health issues, also follow up responsibility of Medical Officer of Health	Provincial standards as to frequency and content of inspections and as to performance requirements – Drinking Water commissioner	Auditing of inspections (frequency, results, follow up) – Drinking Water Commissioner
H. Labs	Accredited, Certified & trained labs	Provincial standards as to accreditation, certification, testing, training requirements including auditing performance – Drinking Water Commissioner	Annual public reporting listing accredited, certified labs and audit performance
I. Training	By each agency in the system as to their staff and their roles, including understanding roles of the others: municipal / local; Ministry of Environment; Drinking Water Commissioner; Health Units; labs etc.	Provincial standards as to training requirements; re-training requirements; content and frequency of critical continuing education topics – Drinking Water Commissioner	Auditing each of the agencies for compliance with training requirements; annual reporting on same: Drinking Water commissioner
J. Public Reporting	Local municipalities, public utilities	Establishment of standards for content and format of public reporting – Drinking Water Commissioner	Auditing of compliance by local municipalities and public utilities with reporting requirements: Drinking Water Commissioner; Annual or more frequent reports by Drinking Water Commissioner as to each of the topics of its responsibilities under this Act
K. Research and Emerging Issues	Dissemination of recent / new research results; emerging issues etc. by Drinking Water Commissioner and Ministry of Health to local municipalities, utilities, health units and Ministry of Environment staff; ensuring receipt and review of these materials by each of these agencies	Identification of research priorities and advice re: same: Drinking Water Commissioner	

Note 1: Public input and advice to the standard setting process and to the Drinking Water Commissioner in carrying out its mandate must be specified and mandated in the legislation.
Note 2: The Drinking Water Commissioner would report to the Minister of the Environment; the Minister of the Environment would remain accountable for the system as a whole.

days in every 90 day period, unless the system serves more than five private residences (section 3(3)). Similarly, the Regulation further specifies that it does not apply to systems that are incapable of supplying water at a rate greater than 250,000 litres/day, unless the system serves more than five private residences (section 3(4)).

Thus, the new Regulation applies to many public and private water systems across Ontario, but does not generally apply to small waterworks serving five or fewer private residences. In effect, this means that a large number of commercial or institutional establishments that supply drinking water to the public from wells or surface water sources are not currently subject to the new regulation. These exempted establishments include facilities which may serve small numbers of people (e.g. stores, service stations, rental cottages, etc.) or large numbers of people (e.g. restaurants, campgrounds, churches, motels, golf courses, etc.), or which may provide water to the public over many months or years (e.g. day nurseries, long-term care facilities, or small schools and hospitals).[266]

For certain facilities not subject to the new Regulation (e.g. schools, day nurseries, restaurants), it is open to local health unit officials to conduct inspections and take water samples to ensure compliance with the *Health Promotion and Protection Act*. However, many facilities (e.g. service stations, churches, rental cottages, etc.) are not routinely inspected by health unit officials at the present time.[267] Even if all such facilities were subject to inspection by health unit officials, it must be noted that health units face resource constraints, competing demands, and other public health priorities which may significantly limit the staff time available to pursue drinking water concerns.[268]

More fundamentally, having some waterworks subject to MOE oversight, but leaving others by default to health unit oversight, perpetuates jurisdictional fragmentation, creates unnecessary confusion and uncertainty, and militates against a consistent and comprehensive approach to drinking water safety. To its credit, the Ontario government has undertaken public consultation on various options for regulating small waterworks, and, among other things, has raised the possibility of making water sampling and testing requirements less frequent, or making treatment requirements more flexible, for small waterworks.[269] At the present time, it is unknown whether – or to what extent – Ontario will regulate small waterworks under O.Reg.459/00 or a separate regulation containing different monitoring and treatment requirements, for example.

In any event, if Ontario's overall goal is to protect drinking water quality and public health, then there is no compelling policy reason to regulate large waterworks but exclude small waterworks from regulatory coverage. Accordingly, if Ontario adopts a comprehensive drinking water statute, then it must apply to all public and private treatment and distribution systems in the province.

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[266] MOE, "Protecting Drinking Water for Small Waterworks in Ontario: Discussion Paper" (August 2000), at page 2.

[267] *Ibid.*

[268] Health unit personnel have tesitifed at the Walkerton Inquiry that they spend relatively little time in drinking water matters, particularly where drinking water is treated and supplied by public waterworks.

[269] MOE, "Protecting Drinking Water for Small Waterworks in Ontario" (August 2000), at pages 3 to 6.

Nevertheless, it is conceivable that regulations under the drinking water statute could be carefully tailored to reflect the fiscal and technical constraints facing owners and operators of small waterworks. The bottom line is that all public and private systems should be subject to the same general principles, duties, obligations, and remedies that are set out in the statute. Where appropriate, these general statutory requirements may be fine-tuned through regulations to address the special circumstances of small treatment and distribution systems.

Because private individual wells do not require a section 52(1) approval under the OWRA, private well owners are not subject to the new Drinking Water Protection Regulation. In addition, private well owners do not require a permit to take water under the OWRA, since water-taking for domestic or farm purposes is generally exempt from the OWRA provisions regarding water-taking (section 34(1) and (5)). Moreover, the MOE has claimed that the water-taking provisions in the OWRA only allows the MOE to address water quantity rather than quality,[270] although a recent Environmental Appeal Board decision has cast considerable doubt on the soundness of the MOE's position.[271] In any event, aside from general requirements regarding well construction, operation and abandonment,[272] it appears that the quality of drinking water from private wells is largely unregulated under Ontario's current legal regime.

Given that many rural Ontarians rely upon their own wells for drinking water purposes,[273] it seems unjustifiable that they should be wholly excluded from regulatory coverage under the current legal regime. This is particularly true in light of studies that have found rural wells to be at risk from various contaminants, such as herbicides, insecticides, bacteria, and organic and inorganic substances.[274] Thus, if Ontario wishes to adopt a holistic, comprehensive approach to protecting drinking water safety for all Ontarians (not just those served by large waterworks), then certain aspects of the legal regime must be extended to include private individual wells.

It should be noted that other jurisdictions have passed and proposed testing requirements in respect of private individual wells. For example, New Brunswick requires new wells to be tested prior to its use for drinking water purposes, as described above in Part II of this Paper. In addition, Québec recently unveiled a draft regulation which requires persons using wells for drinking water purposes to test for coliforms twice per year and nitrates once per year. Moreover, British Columbia has recently enacted the *Drinking Water Protection Act* (Bill 20), which contains provisions which address public and private "domestic water systems" (including those serving single-family residences), and includes new statutory requirements regarding the establishment, operation, floodproofing, and abandonment of private individual wells.

Similarly, New Jersey has proposed mandatory testing of private wells (and disclosure of results) whenever the owner proposes to rent or sell the property to another person. The parameters for such testing include the 84 nationally regulated contaminants under the U.S. *Safe Drinking*

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[270] During Part 1B at the Walkerton Inquiry, this traditional MOE position was outlined in the testimony of Mr.Bob Shaw.
[271] *Schneider et al. v. Ministry of the Environment* (unreported), Board File No. 99-026 (August 31, 1999).
[272] Regulation 903.
[273] Approximately 18% of Ontarians rely upon drinking water from wells or other private sources: MOE, *Drinking Water in Ontario: A Summary Report 1993-97* (2000), at page 10.
[274] See, for example, Agriculture Canada, *Ontario Farm Groundwater Quality Survey, Winter 1991-92* (Ottawa, 1992).

Water Act, plus such further parameters (e.g. pesticides and radium) as may be specified by the State for the region in which the property is located.

Thus, by ensuring that its legal regime includes private individual wells, Ontario would place itself at the forefront of North American jurisdictions which are attempting to protect the health and safety of residents who use wells for drinking water purposes.

RECOMMENDATION #4: Ontario's drinking water statute should apply to all public and private water treatment and distribution systems in the province. In addition, the statute should impose appropriate testing and sampling requirements in relation to private individual wells in order to detect and remedy unsafe drinking water.

(d) Purpose of Legal Regime: The Right to Clean and Safe Drinking Water

The twin legislative pillars of Ontario's current drinking water regime are the OWRA and EPA (and the regulations thereunder). Incredibly, however, neither the OWRA nor the Drinking Water Protection Regulation (O.Reg. 459/00) contains an explicit statement of purpose. The EPA contains a purpose statement, but it is aimed at protecting and conserving the natural environment (section 3). While this is undoubtedly a laudable purpose, it does not necessarily cover or ensure drinking water safety, particularly at the point of consumption.

As one leading authority has noted, "purpose statements play an important role in modern regulatory legislation".[275] First, purpose statements reveal the underlying principles and policies that the legislature intends to achieve by enacting the statute in question. Second, purpose statements help define the limits of discretion granted under the statute, such as administrative discretion conferred upon a minister, official, or tribunal. Third, purpose statements carry more legal weight than preambles, and can be an invaluable source of legislative intent when courts are attempting to construe the meaning of substantive provisions which may be vague or reasonably capable of alternative interpretations.[276]

Significantly, the private member's bills which proposed to establish safe drinking water legislation in Ontario (see Part I of this Paper, *supra*) included a relatively simple purpose statement:

> The purpose of this Act is the protection and enhancement of drinking water throughout Ontario.[277]

More recently, Bill 96 proposed a broader statement of purpose:

> 1.(1) The purposes of this Act are,

[275] *Driedger on the Construction of Statutes*, at page 264.
[276] *Ibid.,* pages 263 to 268.
[277] This purpose statement is found in Bill 45 (1982); Bill 62 (1985); Bill 62 (1986); Bill 14 (1987); Bill 99 (1987); and Bill 25 (1989).

> (a) to recognize that people who use public water systems in Ontario have a right to receive clean and safe drinking water from them;
> (b) to restore public confidence in the quality of drinking water throughout Ontario; and
> (c) to protect and enhance the quality of drinking water in Ontario.
>
> 1.(2) In order to fulfill the purposes set out in subsection (1), this Act provides,
>
> (a) means for reviewing decisions about drinking water quality made by the Government of Ontario and holding it accountable for those decisions; and
> (b) increased access to the courts for the protection of drinking water quality.

Given the various benefits of purpose statements, the current lack of a well-crafted purpose statement in Ontario's drinking water regime is problematic. Among other things, the lack of a purpose statement perpetuates uncertainty about the overall goal or objective of the current legal water regime. Similarly, the absence of a purpose statement makes it more difficult to ascertain the proper limits of administrative discretion concerning drinking water (e.g. planning or approval decisions). In addition, the lack of a purpose statement may impair judicial attempts to discern legislative intent when construing ambiguous provisions. Thus, adopting an express purpose statement would help rather than hinder the proper interpretation and application of Ontario's drinking water statute.

In law, however, a mere statement of legislative purpose does not confer a substantive right that is enforceable in the courts. Thus, even if a broad purpose statement was included in Ontario's drinking water statute, it would not necessarily create an express public right to clean and safe drinking water.

At the present time, the public right to clean and safe drinking water has not been entrenched in the OWRA, EPA, O.Reg.459/00, or any other provincial (or federal) law or regulation. Nevertheless, it is widely accepted that the public is entitled to clean and safe drinking water. For example, former Environment Minister Dan Newman has stated that "all Ontarians are entitled to safe, clean drinking water".[278]

Similarly, Premier Michael Harris has recognized the public entitlement to safe and clean drinking water:

> We're talking about drinking water… The most important requirement for human life on this planet – and something we in this country are privileged to be blessed with in abundance.

[278] MOE News Release, "Ontario launches consultation on additional measures for drinking water protection" (August 9, 2000): see http://ene.gov.on.ca/envision/news/aug9nr.htm.

> We take for granted – and I think we have a right to take for granted – that when you turn on the tap, what comes out is safe and clean, not contaminated. Parents have a right to take for granted that what they give to their children is life-sustaining, not threatening (emphasis added).[279]

If Ontarians are entitled to clean and safe drinking water, then this public right should be explicitly entrenched in drinking water legislation. Drinking water safety is a fundamental and widely shared value that should be expressly recognized by the Ontario Legislature for accountability and enforcement purposes.

It should be noted that there has been continuing debate about the efficacy of adopting a "rights-based" approach for protecting the environment and public health. For example, some commentators have suggested that a rights-based approach is problematic for various legal, policy and implementation reasons:

> The first kind of discussion that usually arises with respect to environmental rights is whether the "rights-based" approach to the protection of the environment is an appropriate one. Some would suggest that a rights-based approach is too formalistic and that it reinforces problems inherent in the legal and social institutions rather than transforms them for the betterment of the environment. One commentator has listed a long list of problems with entrenching environmental rights or at least the generic right to a healthful environment. Some of the problems range from the abstract to the very practical problems of implementation.[280]

Despite such concerns, there are a number of important societal benefits associated with entrenching substantive rights within environmental statutes:

> It can also be argued that environmental rights are an important component of any environmental protection strategy… Moreover, it can be argued that certain rights are needed for the public to allow them to enforce environmental laws and compel governments to act in situations where they would otherwise be reluctant to do so.[281]

Moreover, a substantive right – such as the right to clean and safe drinking water – would entail more than the mere right to be notified of a proposed governmental decision. Instead, it would provide substantive direction to government decision-makers when administrative discretion is being exercised, such as when the MOE is considering the issuance of approvals, permits or licences for undertakings that may adversely affect surface water or groundwater serving as sources of drinking water.

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[279] Premier Michael Harris, "Speech to the Legislature: Walkerton Statement" (May 29, 2000): see http://www.premier.gov.on.ca/english/speeches/WalkertonStatement052900.htm.
[280] Muldoon & Lindgren, *The Environmental Bill of Rights: A Practical Guide* (Emond Montgomery, 1995), at p.5.
[281] *Ibid.*

The rationale for developing a rights-based approach in the environmental context has been framed as follows:

> Perhaps this is the time to renew the search for a substantive right to environmental quality – one which ensures advocates of environmental quality more than a mere right to participate, and entrenches environmental quality in the legal system as a value equivalent to private property rights and a fetter on government discretion to permit environmentally harmful activities…
>
> Substantive rights usually confer upon their holder status to participate in the making of decisions that affect the interest to which the rights relate. In an early attempt to describe the effects environmental rights might have, Christopher Stone identified three incidents of rights: 1. The right-holder can institute legal action; 2. Injury to the right-holder must be taken into account by the legal system; and 3. Relief must run to the benefit of the right-holder…
>
> Those who search for a right to environmental quality hope it will confer more than a right to participate or some requirement of due process or natural justice before environmentally harmful decisions are taken. They want a right which will dictate a decision in favour of environmental protection in difficult cases. They hope this right will be equivalent to a civil liberty, on the one hand, constraining government actions harmful to the environment, and, on the other, equivalent to a property right, restraining the use of private property in ways that are incompatible with sound ecological management.[282]

Thus, the statutory creation of a substantive public right to clean and safe drinking water would enhance efforts to protect drinking water and its sources against contamination and degradation. To be effective, however, this substantive right must be more than a hollow declaration or a green platitude entrenched in law. Instead, the drinking water statute must also provide means to implement the right (e.g. mandatory duty to set, update and enforce standards), and must ensure that key aspects of implementation are judicially reviewable (e.g. ministerial refusal or failure to fulfill statutory duties), as described below.[283]

This is not to say that the right to clean and safe drinking water should necessarily "trump" all other legal rights. Instead, the statutory right to safe drinking water would, at a minimum, entitle the right-holder to at least enter the judicial forum to seek relief in respect of acts or omissions which allegedly violate the right. In such a scenario, it would still be up to the courts to weigh the competing interests and determine, on a case-by-case basis, whether the right to clean and safe drinking water has been violated. In this sense, this substantive right would establish a more level playing field for those Ontarians interested in protecting the environment and public health:

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[282] Swaigen & Woods, "A Substantive Right to Environmental Quality", in Swaigen (ed.), *Environmental Rights in Canada* (Butterworths and CELRF, 1981).

[283] D. Gibson, "Constitutional Entrenchment of Environmental Rights", in Hughes et al., *Environmental Law and Policy (2nd Ed.)* (Emond Montgomery, 1998), at p.420.

> To be substantive, it need not be absolute. However, it must have the same *prima facie* weight as a property right. This would give it substantial clout against actions of the State and against private property rights. If this essential quality is not recognized, environment rights will not be substantive in the same sense as property rights.[284]

Indeed, it could be argued that the public right to clean and safe drinking water is an essential precondition for the fulfillment of all other human rights -- even the right to life itself. Thus, any discussion of protecting other human rights without first guaranteeing the public right to clean and safe drinking water is academic at best.[285]

However, the ability of Ontarians to take legal action to protect their entitlement to safe drinking water is significantly limited under the province's current legal regime. As noted above, this is primarily because no provincial law or regulation explicitly confers a substantive public right to clean and safe drinking water. Accordingly, there is a strong legal and policy argument that Ontario's drinking water statute should create a substantive right to clean and safe drinking water.

RECOMMENDATION #5: Ontario's drinking water statute should entrench a substantive public right to clean and safe drinking water. The statute should further state that its purpose is to recognize, protect and enhance the public right to clean and safe drinking water.

(e) Setting and Amending Standards

One of the most significant developments regarding drinking water safety in Ontario was the transformation of contaminant limits under the Ontario Drinking Water Objectives into binding and enforceable standards under the Drinking Water Protection Regulation (O.Re.g.459/00). As Premier Michael Harris noted when introducing the new Regulation:

> This is the first time in Ontario's history that universal water quality standards and testing have been given the force of law.[286]

Nevertheless, despite the promulgation of the new Regulation, there are number of procedural and substantive concerns about drinking water standard-setting in Ontario.

For example, the OWRA has not been amended to impose a mandatory duty upon the Minister to set and maintain appropriate drinking water standards. To the contrary, the Minister enjoys virtually unfettered discretion regarding such standards since the OWRA merely provides that regulations "may" (not "shall") be made in relation to "standards of quality for potable water"

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[284] Swaigen & Woods, "A Substantive Right to Environmental Quality", in Swaigen (ed.), *Environmental Rights in Canada* (Butterworths and CELRF, 1981).
[285] N. Gibson, "The Right to a Clean Environment", (1990) *Sask. L.R.* 5, at page 16.
[286] Office of the Premier, "News Release: Harris Government Action Plan to Improve Water Quality Includes Tough New Regulation" (August 8, 2000).

(section 75(1)(i)). Indeed, under the current legal regime, it would be open to the Minister to transform some or all of the standards back into non-binding objectives. This scenario may be unlikely to materialize for various political reasons, but, as a matter of law, there is no barrier or impediment under the OWRA to prevent such a rollback from occurring in the future. Clearly, this underscores the tenuous nature of regulations in general, and emphasizes the need to entrench drinking water standards on the firmest legislative basis possible. Thus, at the very least, Ontario's legal regime should impose a mandatory duty on the above-noted Drinking Water Commission (or, alternatively, the Minister) to set and maintain drinking water standards.

Arguably, the mandatory duty to establish drinking water standards is one of the most important strengths of the U.S. *Safe Drinking Water Act*. As described above in Part II of this Paper, the 1974 Act created legally binding standards for a small number of contaminants, and established standard-setting schedule for other drinking water contaminants. The Act was then amended in 1986 to establish new deadlines for standard-setting, and in particular required the Environmental Protection Agency to set or revise standards for 83 contaminants by 1989. Further amendments in 1996 revised the process and timeframe for standard-setting, but the Act continued to impose a number of positive duties on the Agency in relation to standards development.

Accordingly, if Ontario's drinking water statute imposed similar mandatory duties upon the Drinking Water Commission (or Minister) in relation to standards, Ontario would not be breaking new ground but would merely be catching up with long-standing regulatory practice in the United States.

However, imposing a legal duty to set and maintain Ontario's drinking water standards begs the question of whether the current standards are, in fact, sufficiently stringent to protect public health and safety. While former Environment Minister Dan Newman has claimed that the current standards "reflect the most current expertise",[287] there is growing evidence that this may not be the case for all drinking water contaminants. For example, Appendix I to this Paper contains a chart comparing and contrasting Ontario's current standards with those found in other jurisdictions. Significantly, Ontario's current standards for certain parameters are less stringent than the relevant standards in other jurisdictions. Similarly, other jurisdictions have established standards for certain parameters for which no standards exist in Ontario under the Drinking Water Protection Regulation. Moreover, even where drinking water is being treated and meets prescribed standards, public health problems can still occur and remain largely undetected by the public health systems.[288]

It is beyond the scope of this Paper to determine what the "right" number is for each drinking water contaminant of concern in Ontario. The essential point is that once drinking water standards have been established, they cannot be cast in stone and remain unchanged and unreviewed for prolonged periods of time. Instead, the standard-setting process needs to include mechanisms to ensure that existing standards are reviewed and, if necessary, revised in order to achieve maximum protection of public health and safety.

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[287] *Ibid.*

[288] See, for example, Dr. Pierre Payment's testimony at the Walkerton Inquiry (Transcript, February 27, 2001, pages 12-13).

Unfortunately, the current legal regime in Ontario contains inadequate tools to ensure a timely and systematic review of drinking water standards. For example, the OWRA imposes no duty on the Minister to review the adequacy of existing standards, nor does it require the Minister to establish an advisory committee to review and report upon drinking water standards and related matters. Similarly, the provincial government's 1995 decision to abolish the highly regarded Advisory Committee on Environmental Standards ("ACES") has also deprived the Minister of a meaningful, multi-stakeholder process for reviewing drinking water standards in an open and public manner.

As noted above in Part I of this Paper, Ontario participates as a member of the Federal-Provincial Subcommittee on Drinking Water, which serves as the forum for developing national guidelines for drinking water in Canada. These guidelines generally form the basis for drinking water objectives or standards adopted within Canadian provinces, including Ontario. In theory, this Subcommittee could (and sometimes does) review current drinking water guidelines if new information or technological developments suggest that such a review may be warranted.

However, it should be recalled that the Subcommittee has no independent legal status; its consensus-based recommendations are not legally binding on Ontario; it has no enforceable duty to review its own drinking water guidelines; its decision not to reassess a particular guideline is not judicially reviewable; and it has no jurisdiction to compel changes to Ontario's drinking water standards. In addition, there appears to be no formal opportunities for members of the public to participate in the Subcommittee's deliberations, or to initiate reviews of suspect or outdated drinking water standards. Moreover, recent experience demonstrates that the Subcommittee's review process is often slow (presumably due to limited staff and resources), and revisions to individual guidelines may take a number of years to complete. Indeed, the Subcomittee is free to set its own priorities and timeframes for review, which may not necessarily reflect the priorities or interests of Ontario residents. Therefore, it cannot be seriously suggested that the Subcommittee *per se* constitutes an adequate mechanism for reviewing and revising Ontario's drinking water standards.[289]

In a similar vein, it has been suggested by the MOE that the "Application for Review" provisions under Part IV of the EBR provide sufficient means for the public to trigger reviews of inadequate drinking water standards in Ontario.[290] This suggestion is unpersuasive for several reasons. First, if an Application for Review is filed, the Minister is not compelled to actually undertake the requested review. In fact, it is open to the Minister, in his or her discretion, not to undertake the review at all, even in the face of compelling evidence from the applicants that impugned standard is inadequate. This is precisely what has happened in Ontario, as various public interest groups have filed reasonable, properly documented applications requesting reviews of certain drinking water objectives, only to have the Minister, after considerable delay, refuse to carry out the requested reviews for unconvincing reasons.[291]

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[289] Federal-Provincial Subcommittee on Drinking Water, "Approach to the Derivation of Drinking Water Guidelines", February 1995, and "Canadian Drinking Water Guidelines Development Process", also February 1995.
[290] H. Wong, f.n. 17, at page 6.
[291] As described in Part I of this Paper, the MOE has refused to carry out reviews requested under the EBR in relation to drinking water objectives for tritium, trichloroethylene, *Cryptosporidium*, viruses, dichloroethane, and

Second, even where the Minister has made a preliminary decision to carry out the review, there is no guarantee that the review will actually result in a revision to the impugned standard, again because of the Minister's broad discretion in such matters. Indeed, the OWRA, as currently drafted, does not establish the specific criteria to be applied when the MOE is considering the development of a new drinking water standard or the revision of an existing standard (see below).

Third, it is unclear why the onus should fall by default to concerned Ontarians to request reviews of questionable drinking water standards. Since the province is responsible for promulgating the current drinking water standards in Ontario, it is the province – not the public at large – that should be proactively reviewing the standards to ensure that they remain sufficiently protective of human health and safety. This is why Bill 96 recently proposed a mandatory duty upon the Minister to annually undertake "a public review of all the regulations made under this section to evaluate their adequacy in protecting human health" (section 18(5)). However, Bill 96 was not enacted, which means that the Minister still enjoys considerable discretion as to when – or whether – drinking water standards will be reviewed and revised.

In contrast to Ontario's discretionary approach, the duty to systematically review the adequacy of existing standards is well-established in the U.S. *Safe Drinking Water Act*. For example, the 1986 amendments to the Act required the Environmental Protection Agency to set or revise standards for 83 contaminants within a three-year period. The 1996 amendments to the Act varied the standards development process, but imposed a duty on the Agency to review and/or revise the existing primary drinking water regulations every six years. Thus, if Ontario's legal regime imposed a similar duty upon the Minister to periodically review drinking water standards, Ontario would simply be catching up with long-standing regulatory practices in the United States.

The 1996 amendments to the U.S. *Safe Drinking Water Act* are also significant because they specify the factors or considerations to be taken into account during the development of drinking water standards (e.g. prevalence of the contaminant in the environment, degree of risk to human health based upon best available information, etc.). In contrast, the OWRA is silent on the factors or considerations to be taken into account, which, in effect, makes standard-setting almost wholly discretionary in Ontario. If the province's drinking water standards are intended to protect human health and safety, then this primary health-based objective should be expressly entrenched in law to guide the regulatory process. Moreover, drinking water regulations should not only protect the public at large, but should also address the health needs of particularly sensitive or vulnerable segments of the population (e.g. children, elderly persons, immuno-suppressed persons, etc.).

Where there is doubt or uncertainty about the potential health impacts of a particular contaminant, then the "precautionary principle" should be applied and caution shall be exercised

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atrazine. Such refusals have been the subject of critical comment in the Annual Reports prepared by the Environmental Commissioner of Ontario, but such criticism does not prevent similar refusals in the future.

in favour of protecting human health and safety.[292] In other words, scientific uncertainty should not be used as an excuse for failing to regulate drinking water contaminants that may pose a risk to human health and safety.

It may be argued by some that the "cost of compliance" should also factor into the standard-setting process. If so, then the legal regime should stipulate that such economic considerations do not trump or override the primary objective of protecting public health and safety. If, for example, the standards require drinking water suppliers to undertake more extensive water testing or to install better treatment equipment, then this must be considered as a necessary (and unavoidable) cost of protecting Ontarians' health and safety. This is precisely the case in New Jersey, where the state's drinking water legislation does not include cost criteria as considerations in standard-setting, which, in turn, has enabled New Jersey to enact and enforce health-based standards that are stronger than the federal standards.

In addition to entrenching the guiding principles for standard-setting, Ontario's legal regime should also establish mandatory opportunities for public review and comment whenever new standards are being set or existing standards are being developed. At the present time, it appears that such public participation opportunities may be available under Part II of the EBR, which creates public notice/comment rights for certain regulations under the OWRA and other prescribed statutes. However, it must be noted that these EBR provisions are again subject to excessive discretion by the Minister. For example, a proposal to set or revise a drinking water standard may trigger public notice/comment opportunities under the EBR only if the Minister "considers that [the] proposal under consideration… could, if implemented, have a significant effect on the environment" (section 16). Similarly, the limited right to judicial review under the EBR (section 118) is only available with respect to proposed "instruments" (e.g. licences, approvals, permits, etc.), not regulatory standards. In short, a Ministerial failure or refusal to provide proper public notice or comment opportunities with respect to drinking water standards does not appear to be judicially reviewable in Ontario.

Accordingly, there is no guarantee that meaningful public consultation will occur under Ontario's current legal regime when drinking water standards are being set or revised. In fact, in recent years, the Environmental Commissioner's Annual Reports have documented countless instances where environmentally significant proposals were not posted on the EBR Registry or otherwise subjected to meaningful public review and comment. Indeed, this is precisely what occurred when the Drinking Water Protection Regulation itself was developed, as the MOE provided negligible public comment opportunities, as described above. Similarly, the MOE decision to close its provincial water testing laboratories in 1996 was not posted on the EBR Registry, nor were municipalities or members of the public consulted in advance about this fundamental change. As a result, Ontario municipalities had barely eight weeks to find and hire private labs to undertake drinking water sampling and testing.[293]

[292] In its *Statement of Environmental Values* under the EBR, the MOE has committed to exercising "a precautionary approach in its decision-making".
[293] Environmental Commissioner of Ontario, *Annual Report 1996: Keep the Doors Open to Better Environmental Decision Making*, at pages 17-20.

The discretionary approach to public participation in drinking water standard-setting in Ontario is to be contrasted with the detailed regulatory procedures under the U.S. *Safe Drinking Water Act*. For example, the Environmental Protection Agency is compelled by law to publish draft standards as "proposed rules" in the Federal Register, and to provide public comment opportunities (including hearings) on the draft standards prior to finalization. In addition, the Agency must consult with the National Drinking Water Advisory Council established under the Act, as well as the Science Advisory Board established under the *Environmental Research, Development and Demonstration Authorization Act, 1978*. In addition, the Act creates a broad right of judicial review to ensure Agency compliance with statutory requirements regarding regulations. These and other provisions are clearly intended to ensure that members of the public – who are the intended beneficiaries of drinking water standards – have a meaningful opportunity to get involved in setting and revising regulatory requirements.

The public participation rights and remedies found in federal American legislation clearly represent a vast improvement over the current discretionary regime in Ontario. While it may not be necessary to import all of the prescriptive details associated with American regulation-making, it is highly desirable that, at the very least, Ontario's drinking water statute should include a self-contained code for public participation in setting and revising drinking water standards. It is noteworthy that the principle of public participation was entrenched in virtually every private members' bill introduced in Ontario to establish safe drinking water legislation; however, none of these bills were enacted, as described in Part I of this Paper.

At a minimum, Ontario's drinking water statute should make public notice/comment mandatory whenever standards are being set or revised (e.g. a minimum 60 day comment period, and enhanced public notice through electronic means, newspaper ads, etc.). To ensure compliance, the statute should provide that a failure to satisfy these procedural requirements is judicially reviewable at the instance of any Ontario resident. In addition, the statute should include provisions that permit Ontario residents to petition the Drinking Water Commission (or Minister) to set new standards for unregulated contaminants, or to make existing standards more stringent. As described below, the statute should also create a provincial drinking water advisory committee to assist in setting, reviewing and revising drinking standards.

With respect to unregulated contaminants, it may not be sufficient to simply leave it to concerned Ontario residents to look out for new or emerging substances that may pose a risk to public health and safety. Since the provincial government has the primary responsibility for protecting drinking water and its sources, the Ontario statute should place a mandatory duty on the Drinking Water Commission (or Minister) to identify and evaluate unregulated contaminants in Ontario. Under the current legal regime, there is no such duty on the Minister, which means, in effect, that new threats to drinking water quality (e.g. viruses, bacteria, disinfection by-products) could go undetected and unregulated for prolonged periods of time.

In comparison, the 1996 amendments to the U.S. *Safe Drinking Water Act* require the Environmental Protection Agency to publish a list of high-priority unregulated contaminants, and for at least five such contaminants, to make a determination whether they will be regulated under the Act. Similarly, New Jersey assesses contaminants (e.g. certain carcinogens) that are not regulated under the federal Act to determine if they constitute a current or future threat to public

health and safety. This type of preventative approach is conspicuous in its absence in Ontario, and should undoubtedly be entrenched within provincial drinking water legislation.

For the foregoing reasons, the recent Drinking Water Protection Regulation cannot be viewed as a complete regulatory vehicle for fully addressing drinking water concerns in Ontario. To be fair, the establishment of enforceable contaminant standards under the Regulation was an important first step by the provincial government. However, unless additional changes are made (e.g. mandatory duty to set/revise standards; substantive criteria to guide regulation-making; meaningful public participation; and assessment of unregulated contaminants), then Ontario's regulatory regime should be regarded as incomplete at the present time.

RECOMMENDATION #6: Ontario's drinking water statute should include provisions that:

(a) impose a mandatory duty upon the Drinking Water Commission (or Minister) to set and maintain drinking water standards;

(b) impose a mandatory duty upon the Drinking Water Commission (or Minister) to periodically review the adequacy of existing standards, and to make such revisions to the standards as may be necessary to protect human health and safety;

(c) specify that the primary objective of drinking water standards is to protect public health and safety of all Ontarians, including those who may be particularly vulnerable to waterborne illness or disease;

(d) entrench the precautionary principle as a mandatory consideration when drinking water standards are being drafted, reviewed or revised;

(e) establish legally binding mechanisms for meaningful public participation in drafting, reviewing or revising drinking water standards; and

(f) impose a mandatory duty upon the Drinking Water Commission (or Minister) to identify and evaluate new and emerging contaminants for which no standards exist in Ontario.

(f) Approvals, Licencing and Accreditation

Ontario's current legal regime contains a number of useful provisions regarding approval, licencing and accreditation matters. For example, waterworks owner/operators are required to apply for and receive a certificate of approval under section 52 of the OWRA, and it is open to the Director to impose terms and conditions on the approval to protect public health and safety. To guide the approvals process, the MOE has recently prepared some model conditions[294] and

[294] These model conditions for waterworks using surface water or groundwater have been posted on the MOE website: http://www.ene.gov.on.ca/envision/WaterReg/WaterReg.htm.

published various guidance documents and technical briefs. Moreover, the Drinking Water Protection Regulation requires owners/operators to apply for approval in accordance with the Ontario Drinking Water Standards, and further requires the Director to "have regard" for the Standards during the approvals process. Water-taking permits are also required under the OWRA for waterworks withdrawing more than 50,000 litres/day of surface water or groundwater.

With respect to licencing matters, the MOE has promulgated a regulation (O.Reg. 435/93), which classifies water treatment/distribution facilities and establishes a licencing system for operators of such facilities. This regulation also requires ongoing training of operators (40 hours per year), and sets out basic record-keeping requirements. The MOE has recently proposed to amend this regulation by creating a new licence category (water quality analyst) to allow certain parameters to be tested in the facility rather than by an accredited laboratory. The MOE has further proposed to require operators to verify that they have received 36 hours of additional training in the three years prior to licence renewal.

With respect to accreditation, the Drinking Water Protection Regulation requires private laboratories to be accredited (by the Standards Council of Canada or equivalent) for any sampling or analysis they are undertaking on behalf of waterworks owners/operators. In addition, owners/operators are required to disclose to the MOE the identity of the laboratories being used for sampling and analysis, and laboratories cannot subcontract analysis work to unaccredited laboratories. A listing of accredited private, municipal and provincial laboratories has been published by the MOE.[295]

Taken together, Ontario's current requirements regarding approvals, licencing and accreditation appear largely consistent with similar provisions in other jurisdictions. For example, Canadian jurisdictions generally require drinking water suppliers to apply for and receive a permit or licence, and several provinces have passed or proposed operator licencing and/or training requirements, as described above in Part II of this Paper.

Similarly, England's Drinking Water Inspectorate works with the UK Accreditation Service to set standards for laboratories accredited for drinking water analysis. In addition, English water quality regulations require laboratories to establish quality control protocols that are periodically checked by an independent inspector.

Nevertheless, there are certain improvements that can be made to Ontario's current legal regime regarding approvals, licencing and accreditation. For example, with respect to approvals, there is considerable concern about the limited role of the public where municipalities are seeking waterworks approvals and water-taking permits under the OWRA. In many instances, applications for these technical approvals will occur during or after the completion of the planning steps prescribed in the Municipal Class EA, as described above in Part of this Paper. In light of this EA coverage, the MOE has taken the position that these applications do not necessarily have to be posted on the EBR Registry for public review, comment, or third-party appeal because of the "EA exemption" contained in the EBR (section 32).[296]

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[295] *Ibid.*

[296] See the Part 1B testimony of Mr. Bob Shaw at the Walkerton Inquiry.

The result is that members of the public may have no formal notice or comment opportunities with respect to the technical approvals under the OWRA, or the terms and conditions that may be proposed to address environmental or public health concerns. At the very least, notice of these technical approvals could be posted on the EBR Registry for informational purposes pursuant to section 6 of the EBR, or alternatively, could be posted on the electronic database recommended below. Further concerns about the existing approvals process are described below in the context of source assessment and protection.

If Ontario adopts a comprehensive drinking water statute, then it would make little sense to leave waterworks approval requirements in section 52 of the OWRA. Accordingly, the drinking water statute should include a self-contained procedure for the Drinking Water Commission to issue, refuse and amend approvals to waterworks providing drinking water. Among other things, this procedure should ensure meaningful public notice and comment in the decision-making process.

Developing a drinking water statute would also provide an opportunity to address concerns about the implementation of Ontario's current licencing regime. Traditionally, for example, there appears to have been little meaningful follow-up by MOE staff to ensure that waterworks operators were properly licenced for their particular facility, or that they were receiving the annual training required by O.Reg. 435/93. In Walkerton, MOE inspection reports in the 1990s routinely noted inadequate training records were kept by the waterworks, but these findings were not pursued by way of an order or prosecution to ensure compliance. Moreover, the Walkerton Inquiry has received evidence that unlicenced staff were undertaking tasks that should have been undertaken by the facility's only two licenced operators. Significantly, both of these operators were "grand-fathered" under the licencing regime, and were not required to take courses or write exams. Similarly, given the lack of prescriptive detail in the regulation as to what properly constitutes annual "training", it appears that it was open to Walkerton's licenced operators to consider as "training" various items not directly related to waterworks operations.[297]

At the present time, it is unknown whether or to what extent such circumstances existed in other small waterworks across Ontario. In any event, the Walkerton circumstances clearly highlight some shortcomings in Ontario's licencing regime, which was largely unchanged by the Drinking Water Protection Regulation. At the very least, the licencing regime should be tightened up by eliminating grand-fathering opportunities, better defining what constitutes "training", and undertaking proper investigation and enforcement to ensure full compliance with licencing and training requirements.

Finally, with respect to laboratory accreditation, Ontario's drinking water statute should retain existing requirements but entrench them on a firm legislative basis.

In summary, Ontario's existing provisions regarding approvals, licencing and accreditation offer a good starting point, and appear generally consistent with requirements found in other jurisdictions. As discussed above, however, there are opportunities for fine-tuning and strengthening these provisions that should be pursued in Ontario's drinking water statute.

[297] See the Part 1A testimony of Mr. Frank Koebel at the Walkerton Inquiry.

RECOMMENDATION #7: Ontario's drinking water statute should contain provisions that:

(a) establish a self-contained process for the Drinking Water Commission to approve (or reject) applications for waterworks that supply drinking water, and to ensure full public participation in the approvals process;

(b) clarify and strengthen existing requirements regarding operator licencing and training; and

(c) retain existing requirements regarding the mandatory use of accredited laboratories for drinking water sampling and analysis.

(g) Operational Duties: Testing, Treatment, Notification and Corrective Action

Ontario's legal regime has been recently strengthened by the Drinking Water Protection Regulation, which establishes a number of mandatory duties in relation to drinking water testing, treatment, notification, and corrective action. In particular, this Regulation requires owners of water treatment and distribution systems to:

- carry out water tests for microbiological parameters, turbidity, chlorine residual, fluoride, volatile organics, inorganics, nitrates/nitrites, pesticides and PCBs in accordance with the prescribed number, frequency and locations (section 7 and Schedule 2);

- provide a minimum level of treatment consisting of disinfection in relation to groundwater sources, and chemically assisted filtration and disinfection (or other equivalent treatment methods) in relation to surface water sources (sections 5(1) and (2));

- ensure that no water enters the distribution system or plumbing unless it has been treated with chlorination (or equivalent treatment method) (section 5(3));

- provide immediate verbal and written notice to the MOE and medical officer of health if water sample analyses show exceedances of acceptable concentrations for prescribed parameters, or indicate adverse water quality (section 8);[298]

- undertake resampling or other prescribed "corrective actions" (e.g. increase chlorination or flush water mains) if the above-noted notice is submitted to the MOE and medical officer of health (section 9); and

- post a public warning notice if the owner does not comply with sampling/analysis requirements in respect of microbiological parameters, or if notice to the MOE and medical

[298] The laboratory that conducts the analysis is under a similar duty to provide notice to the MOE and medical officer of health in such circumstances.

officer of health is required in respect of a microbiological parameter and the prescribed corrective action has not been taken (section 10).

It should be pointed out that the above-noted treatment requirements do not apply to waterworks approvals that are issued after August 1, 2000 which do not require disinfection or chlorination, provided that that source used is groundwater and other criteria are met (section 6). For pre-existing facilities that do not meet the new treatment requirements, the Regulation gives the owners until December 31, 2002 to come into compliance (section 5(5)).

These new regulatory provisions have been accompanied by numerous MOE guidance documents and technical briefs that attempt to further explain the requirements respecting testing, treatment, notification, and corrective action.[299]

While these regulatory changes represent a clear step forward in protecting public health and safety, there is a need for greater clarity and definition within the Regulation. For example, the Regulation stipulates differing treatment requirements for surface water and groundwater, but fails to expressly deal with those situations where groundwater is under the influence of surface water (e.g. Well #5 at Walkerton). By failing to define groundwater "under the influence" – and by failing to specify that surface water treatment requirements apply to groundwater "under the influence" – the Regulation perpetuates uncertainty. In addition, the current Regulation invites water suppliers to avoid surface water treatment requirements by claiming that their groundwater sources are not "under the influence". This is a significant gap that must be immediately addressed in Ontario's drinking water statute.

Aside from operational concerns arising from the Regulation, there is a strong argument that the Regulation's requirements should, to the greatest possible extent, be entrenched in a statute, for the reasons described above. In this regard, it should be noted that Ontario's recently proposed Bill 96 attempted to place testing, treatment, notification and corrective action requirements on a firm legislative basis.

Similarly, a number of other jurisdictions have elected to entrench these critically important requirements into law (or mixed law and regulation), rather than regulation alone. In British Columbia, for example, disinfection is mandatory by regulation, but the recently enacted *Drinking Water Protection Act* would impose a legal duty upon water suppliers to supply "potable" water,[300] and would impose water monitoring and notification requirements upon water suppliers and their laboratories.

Similarly, in the United States, the *Safe Drinking Water Act* requires the Environmental Protection Agency to promulgate various water treatment rules. For example, the Agency has developed a number of regulatory requirements for surface water and groundwater, such as:

[299] See, for example, MOE, "Notification Requirements" (August 2000), "Adverse Drinking Water Quality – Corrective Actions" (August 2000).
[300] "Potability" is defined in the B.C. proposal as water that meets prescribed standards and is safe to drink without further treatment.

- Total Coliform Rule (1989): sets out monitoring and public notification requirements in relation to total coliforms, which indicate presence of (or potential for) fecal contamination;

- Surface Treatment Rule (1989; rev. 1998): covers public water systems that use surface water or groundwater under the influence of surface water (as defined), and requires disinfection and filtration (unless filtration avoidance criteria are satisfied);

- Information Collection Rule (1996): requires monitoring and data reporting for the purposes of developing new microbial and disinfection byproducts rules;

- Stage 1 Disinfectants/Disinfection Byproducts Rule (1998): sets out maximum residual levels for certain disinfectants (e.g. chlorine) and disinfectant byproducts (e.g. total trihalomethanes); and

- Ground Water Rule (proposed May 2000): seeks to implement a multi-barrier approach consisting of: periodic sanitary surveys; hydrogeological assessments; source water monitoring; corrective action (e.g. treatment, alternative water source, elimination of contaminant source, etc.); and compliance monitoring.

In comparison to the Environmental Protection Agency, it appears that Ontario has been inexplicably slow to impose legally enforceable treatment, monitoring, notification, and corrective action requirements upon drinking water suppliers. In any event, the development of safe drinking water legislation in Ontario would give the province an important opportunity to catch up with (if not surpass) current requirements in the United States. At the very least, the Ontario statute should entrench current operational requirements under O.Reg. 459/00, but should also include a definition of "groundwater under the influence of surface water" and should specify that surface water requirements apply in such situations, as described above.

RECOMMENDATION #8: Ontario's drinking water statute should include provisions that:

(a) entrench current testing, treatment, notification and corrective action requirements into law rather than regulation; and

(b) define "groundwater under the influence of surface water", and specify that surface water treatment requirements apply in such situations.

(h) Source Assessment and Protection

One of the most significant gaps in Ontario's current legal regime is the absence of a clear legal duty upon private and public drinking water suppliers to undertake "source assessment" (e.g. detailed hydrological or hydrogeological evaluations) or "source protection" programs (e.g. land acquisition, setbacks, land use restrictions, etc.) in order to safeguard drinking water sources against the risk of current or future contamination.

In particular, the OWRA does not explicitly require drinking water suppliers to take any steps to identify, assess, or mitigate threats to surface water or groundwater that serve as sources of drinking water. Similarly, it does not appear that "source protection" programs have been routinely required by terms and conditions attached to waterworks approvals issued by the MOE under section 52 of the OWRA.

In some instances, however, MOE officials have made non-binding suggestions to drinking water suppliers that they undertake land acquisition, or to impose land use restrictions, in order to protect sources of drinking water. In fact, this is precisely what occurred in Walkerton, where the MOE issued an OWRA approval in 1978 for Well #5, but did not include a condition that expressly required source protection measures.[301] Instead, having regard for Well #5's known vulnerability to surface water influence, MOE personnel recommended (and municipal staff agreed) that adjoining agricultural lands should be purchased by the municipality in order to protect drinking water quality. However, this recommendation was never implemented by the municipality, and expert evidence suggests that subsurface and/or overland flow from one or more adjoining farms contaminated Well #5 with a deadly strain of E. coli during April or May 2000.[302]

The lack of an express legal duty to undertake source assessment/protection is compounded by the general lack of detailed MOE policy on precisely how to secure and protect sources of drinking water. It now appears well-accepted that the critical first step in the multi-barrier approach to ensuring drinking water quality (and protecting public health and safety) is to find the best possible source of drinking water.[303] However, there appears to be few, if any, detailed MOE policies that expressly direct drinking water suppliers to avoid particular locations (e.g. springs or wetlands) or problematic hydrogeological settings (e.g. "karst" bedrock containing enlarged fissures that can quickly transport groundwater contaminants over great distances).[304]

The vulnerability of a proposed source of drinking water might be taken into account when the MOE is considering an application for a waterworks approval under section 52 of the OWRA, as described below. In the worst case scenario, the risk of source contamination could theoretically lead the MOE to reject the application for approval. In practice, however, this result is not necessarily guaranteed, particularly in the absence of prescriptive policy direction regarding source assessment/protection. In fact, MOE representatives have acknowledged that Walkerton's Well #5 would still be approved under the current legal regime, notwithstanding its clear vulnerability to off-site sources of contamination.

The general policy vacuum in Ontario regarding source assessment/protection stands in stark contrast to the numerous policies that have been developed by the MOE to provide guidance on the preferred locations for waste disposal sites (e.g. Guideline C-13), or the types of land uses that will be permitted within 500 m of a landfill (e.g. Guideline D-4). In fact, some of these MOE policy preferences have been incorporated into detailed regulatory standards (e.g. O.Reg.

[301] Interestingly, Well #5 was initially established without MOE approval under the OWRA, but this approval was subsequently issued by MOE officials.
[302] See the Part 1A testimony by Dr. Goss and Dr. Gilham at the Walkerton Inquiry.
[303] See the Part 1A testimony of Dr. Huck at the Walkerton Inquiry (February 28, 2001).
[304] See the Part 1A testimony of Dr. Gilham at the Walkerton Inquiry.

232/98). Given the potential threats of poorly located landfills to public health and safety, it is not surprising that the MOE has developed an extensive legal and policy framework regarding landfills. What is surprising, however, is the MOE's apparent failure to develop an equally extensive legal and policy framework regarding drinking water sources, even though poorly located wells (or intake pipes in vulnerable watercourses) can also create profound public health risks.

Given the absence of Ontario legislation or detailed MOE policy requiring source assessment/protection, it is perhaps inevitable that such matters are not adequately addressed in the Drinking Water Protection Regulation. For example, the Regulation indicates that "a person who applies for an approval shall do so in accordance with the Ontario Drinking Water Standards" (section 4). Similarly, the Regulation provides that in considering an application for a section 52 approval under the OWRA, the Director "shall have regard to the Ontario Drinking Water Standards" (section 4(2)). It should noted, however, that these "Standards" are not a regulation *per se*, but are instead an MOE publication dated August 2000 containing various drinking water policies, objectives and guidelines.

The MOE's unfortunate use of the term "Standards" to describe what is essentially a guidance document will likely lead to more – not less – confusion and uncertainty about the important legal distinctions between standards prescribed by regulation (which are enforceable) and policies, guidelines, and objectives (which are not enforceable in and of themselves). In fact, the document itself seems to suggest that the only "standards" it contains are those which specify Maximum Acceptable Concentrations (or Interim Maximum Acceptable Concentrations) for parameters regulated under the Drinking Water Protection Regulation.[305]

In any event, the MOE's so-called "Standards" document contains some generic (if not painfully obvious) suggestions regarding source protection. For example, the document recommends that the proposed water supply "should" be of good quality, and that the intended source "should" be the one least subject to pollution.[306] Similarly, the document suggests that waterworks owners "should" conduct surveys of potential pollution impacts on the water supply, and that the survey "should" recognize all potential sources of pollution.[307] The frequent use of the permissive term "should" (as opposed to mandatory terms such as "shall") underscores the loose nature of these "Standards",[308] and undermines any suggestion that these "Standards" provide any peremptory direction upon drinking water suppliers regarding source protection. Indeed, despite the critical importance of source protection, this subject-matter receives only limited textual discussion in the "Standards".

Accordingly, even though the Drinking Water Protection Regulation states that applicants seeking a section 52 approval under the OWRA must comply with these "Standards", the "Standards" themselves (including provisions relating to source protection) are drafted in a

[305] MOE, "Ontario Drinking Water Standards" (August 2000), at pages 1-2.
[306] *Ibid.*, at page 2.
[307] *Ibid.,* at page 3.
[308] Even where testing reveals continuing exceedances of parameter limits, the "Standards" document merely provides that the Director "may" (not "shall") reject the proposed water source. Thus, the Director is free to approve a vulnerable (or even contaminated) water source if he or she is of the opinion that "effective and economic treatment is available": *ibid.,* at page 2.

general and overly permissive manner. In fact, it appears that the "Standards" are not even binding on the Director, in that he or she must merely "have regard to" (as opposed to "shall apply") the "Standards" when considering section 52 applications. Such discretionary language[309] is at odds with the principles of accountability and certainty since the Director is free to apply – or not apply – the provisions of the "Standards" document on a case-by-case basis, as long as he or she has at least considered the document during the approvals process.

It should be further noted that the Regulation also requires the periodic submission of "engineer's reports" (section 13). Again, the actual content of "engineer's reports" is not prescribed by the Regulation, but in a related MOE guidance document which, among other things, requires "assessment of the potential for microbiological contamination" and "characterization of the raw water supply source".[310] First, it should be noted that this document does not appear to require an assessment of the potential for non-microbiological contamination (e.g. pesticides, radioactive substances, or organic and inorganic substances). Since the MOE has recognized that such contaminants can be present in source waters in Ontario,[311] the apparent exclusion of non-microbiological substances in the engineers' assessment of potential contamination is both inexplicable and unjustifiable.

Second, the MOE document suggests that the engineer's assessment of the potential for microbiological contamination is largely limited to a visual inspection of the waterworks (including chlorination facilities) in order to identify "potential sources and pathways of contamination to the physical works". Thus, where groundwater is used as the drinking water source, the engineer should determine whether there is adequate "wellhead protection" (e.g. ensuring the well casing is intact and secure).[312] However, it appears that the engineer's report does not have to include a systematic inventory or review of land uses within the watershed (or sub-watershed) that are or may be affecting the quality of the drinking water source, especially in respect of non-microbiological parameters. Similarly, it does not appear that the engineer's report has to include recommendations for source protection through the establishment of protection zones (e.g. by purchase, expropriation, or land use restrictions). Instead, the engineer's recommendations seem limited to technical or operational matters, and are only specifically required to address the potential for microbiological contamination, as described above.[313]

Third, the MOE document requires the engineer's report to characterize the raw water source for all parameters, and to identify treatment that may be necessary to ensure compliance with the Drinking Water Protection Regulation and the above-noted "Standards" document. In addition, the engineer's report must identify "parameters which may impact the treatment of water and influence the operation of the system", and must determine the potential for formation of

[309] This provision is reminiscent of the controversial "have regard" language found in section 3(5) of the *Planning Act*, which, in effect, leaves it open to planning authorities to decide, on a case-by-case basis, whether to apply the provisions of the Provincial Policy Statement.
[310] MOE, "Terms of Reference: Engineers' Reports for Water Works" (August 2000; rev. January 2001), at pages 1-2.
[311] MOE, *Drinking Water in Ontario: A Summary Report 1993-97* (2000), at pages 10-11.
[312] MOE, "Terms of Reference: Engineers' Reports for Water Works" (August 2000; rev. January 2001), at page 3.
[313] *Ibid.*, at pages 4-5.

disinfection by-products.[314] While these are indeed important matters for the engineer's report to address, they fall short of requiring the development and implementation of comprehensive source assessment/protection measures. If anything, these current requirements reinforce the traditional "end-of-pipe" focus of waterworks operations, where considerable attention is paid to treatment equipment and practices, such as chlorination or filtration, but where scant attention is paid to securing the long-term quality of the raw water source in the first place.

In summary, Ontario's current legal regime largely relegates source assessment/protection matters to MOE guidance documents, rather than the OWRA or regulations thereunder. This general lack of statutory emphasis on source assessment/protection in Ontario stands in contrast to other jurisdictions that have placed considerable priority on source assessment/protection, and that, in some instances, have codified such requirements in law or by regulation.

For example, New Brunswick has passed a Watershed Protection Area Designation Order to protect surface watercourses serving as drinking water sources, and a Wellfield Protection Area Designation Order to protect groundwater serving as drinking water sources. As described above in Part II of this Paper, the Watershed Order establishes setback or buffer zones around designated water supply areas, and restricts land uses in and around such areas. Similarly, the Wellfield Order utilizes a three-zone approach to restrict certain land uses or activities in order to protect aquifers.

British Columbia's recently enacted *Drinking Water Protection Act* also contains a number of source assessment/protection provisions. For example, Part 3 of this Act requires water suppliers to prepare reports that identify, inventory and assess:

- the drinking water source, including land use and other conditions that may affect the source;

- the water supply system, including treatment and operation;

- monitoring requirements; and

- threats to drinking water provided by the system.

Such assessments must be prepared in consultation with the public, and where threats to drinking water have been identified, the water supplier may be required to prepare and implement an appropriate response plan. Among other things, the response plan can include public education, best management practices, infrastructure improvements, and planning or zoning changes that may be necessary to address the threat.

Similarly, Part 5 of the Act authorizes the designation of areas for the purpose of developing a "drinking water protection plan" for such areas. Again, such plans are to be developed with public and stakeholder input, and the plans may address operational changes, permit amendments, and land use planning considerations. For implementation purposes, the plan may supersede or amend decisions made under other statutes or planning processes. Moreover, the plan can restrict or prohibit well drilling in the designated area, or prohibit activities that may

[314] *Ibid*., at page 4.

threaten prescribed drinking water sources in the designated area. The Act also contains amendments to the *Water Act* which enable the development of "water management plans".

Source assessment/protection provisions are also found in the United States at both the federal and state levels. The U.S. *Safe Drinking Water Act*, for example, requires every State to develop programs (with public input) to protect groundwater serving as sources of public drinking water. Accordingly, States must delineate "wellhead protection areas" in which potential contamination sources are to be managed in order to reduce or eliminate threats to drinking water. Such areas are determined on such factors as: well pumping rates; groundwater time-of-travel calculations; aquifer boundaries; and degree of protection offered by the local overburden. Currently, 48 States and two territories have wellhead protection programs in place. To assist in the development of such programs, the Agency has published detailed guidance documents.[315]

Significantly, the 1996 amendments to the U.S. *Safe Drinking Water Act* placed greater emphasis on pollution prevention, and, among other things, created the statutory framework for the Source Water Assessment and Protection Program ("SWAPP"). Accordingly, each State is required to establish a SWAPP that describes how the State will define source water protection areas; inventory significant contaminants in such areas; and determine the vulnerability of each public water supply to contamination. The SWAPP is complementary to the wellhead protection programs described above, and applies to both surface water and drinking water used as sources of public drinking water. The States' SWAPPs were approved by the Environmental Protection Agency in 1999, and States are obliged to complete source water assessments for public drinking water systems by November 2001 (although extensions to May 2003 may be granted by the Agency). A summary of the source water assessment must be made available to the public in the consumer confidence reports required under the Act.

Interestingly, once the assessments are completed, the *Safe Drinking Water Act* does not expressly require States to protect water sources; however, such measures are encouraged by the provisions of the Surface Water Treatment Rule. This Rule, which applies to all systems using surface water or groundwater under the influence of surface water, requires disinfection and, in most cases, filtration. However, filtration requirements may be avoided if the systems meet stringent Agency criteria that define high quality source water. As described above in Part II of this Paper, a number of large U.S.cities – such as New York, Boston and Seattle – have been able to avoid filtration under these avoidance provisions. In May 2000, the Agency proposed a "Ground Water Rule" which is intended to incorporate State SWAPPs and wellhead protection programs into an overall Agency program for protecting groundwater sources of public drinking water.[316]

At the state level, New York and New Jersey have been particularly active regarding source assessment/protection. For example, New York requires water suppliers to own property within a 100 foot radius of the wellhead, and to control or restrict activities on property within a 200

[315] See, for example, "Guidelines for Wellhead and Springhead Protection Area Delineation in Carbonate Rocks" (EPA), which provides detailed information on establishing wellhead protection programs for fractured or "karst" bedrock, which is considered sensitive to contamination.

[316] EPA, "National Primary Drinking Water Regulations: Ground Water Rule", *Federal Register* (Vol. 65, No.91, May 10, 2000.

foot radius of the wellhead. In New Jersey, source assessments must consider not only federally regulated substances, but also unregulated substances that may constitute a present or future health threat.

European jurisdictions have also placed increasing importance on source assessment/protection measures. In October 2000, for example, the European Union ("EU") introduced the Water Framework Directive (2000\60\EC) which obliges member states to enact domestic legislation requiring the development of watershed-based management plans to protect water quality and quantity. This Directive also requires member states to implement measures to prevent or limit contamination of groundwater, as described above in Part II of this Paper. Similarly, England's Environment Agency has authority to establish "water protection zones" in respect of surface water sources of drinking water. Such zones are defined catchment areas in which special land use controls are established in order to prohibit or restrict activities that degrade surface water quality.

A similar watershed-based approach has been adopted in Australia, where the New South Wales government enacted the 1998 *Sydney Water Catchment Management Act*. This Act established the Sydney Catchment Authority, which, among other things, has a mandate to manage, protect, and monitor water quality within defined catchment areas (e.g. by restricting public access to such areas).

In summary, having regard for the initiatives undertaken by other provincial, state and national governments, Ontario lags far behind in terms of source assessment/protection. If Ontario wishes to ensure drinking water quality, then the province clearly needs to follow the lead of these other jurisdictions by entrenching mandatory source assessment/protection requirements into law. As described above, the Drinking Water Commission should develop provincial standards regarding source assessment/protection programs, and should oversee and review the implementation of such programs at the local level.

Some municipal officials have properly noted that they lack the full suite of tools necessary to implement source protection.[317] Thus, the drinking water statute should ensure that municipalities have sufficient statutory powers to, among other things, acquire or expropriate lands; enter into co-management or stewardship arrangements with landowners; or enact zoning by-laws under the *Planning Act* to restrict or prohibit land use and development for source protection purposes including tools to deal with existing uses.

RECOMMENDATION #9: Ontario's drinking water statute should expressly require public and private water treatment and distribution system owners and operators to:

(a) avoid drinking water sources that will, or are likely to, result in hazards to public health and safety due to pollution from activities within the watershed or sub-watershed;

[317] See, for example, the comments of staff from the Regional Municipality of Waterloo at the Walkerton Inquiry's Part II public meeting in Waterloo (March 22, 2001).

(b) assess and periodically review the vulnerability of their sources of drinking water to current or future contamination or degradation, and publicly report upon the results of such assessments;

(c) develop and implement appropriate source protection measures where necessary to safeguard public health and safety;

(d) involve the public in developing source assessment programs and source protection measures that will be implemented to safeguard public health and safety; and

RECOMMENDATION #10: Ontario's drinking water statute should amend existing laws (such as the *Planning Act, Municipal Act,* and/or *Conservation Authorities Act*) to ensure that municipal officials have sufficient legal tools to implement the measures specified in source protection programs.

(i) Community Right to Know

The term "community right to know" is usually used to denote several different ideas or concepts. Defined broadly, this term means that the public:

- should be regularly informed about what is in their drinking water;

- should receive timely and adequate warnings if the drinking water is found to be unsafe or may be unsafe, if testing or treatment equipment is inoperative or malfunctioning; or if required sampling or testing is not being undertaken;

- should be regularly informed about the water supplier's operating performance, including whether there have been exceedances of contaminant limits or other non-compliance with prescribed standards; and

- should have full and timely access to all records, reports, and documents kept or maintained by the water supplier.

If these are the essential elements of the "community right to know", then it is clear that Ontario's current legal regime satisfies some – but not all – of these elements. Significantly, the OWRA itself is completely silent on this fundamentally important matter. Instead, "community right to know" is left to the Drinking Water Protection Regulation, which, among other things, requires the owner of a water treatment or distribution system to:

- post a "warning notice" in a "prominent location" if the owner does not comply with sampling or analysis requirements for a microbiological parameter, or if there is a microbiological indicator of adverse water quality but no corrective action has been taken (section 10);

- make available for public inspection various technical and legal documents, such as: laboratory reports; records regarding chlorine residual, turbidity and other operational parameters; statutory approvals, orders and directions; quarterly reports (see below); the Regulation and the Ontario Drinking Water Standards (section 11); and

- submit quarterly reports (also known as "consumer confidence reports") to the MOE (and to users upon request) on the drinking water system's operation, compliance measures, sampling results, and notices (if any) of adverse drinking water (section 12).

While these provisions represent a good first step towards entrenching "community right to know" in Ontario, there are a number of questions and concerns about the scope, content and enforcement of such provisions. First, it should be noted that since the Regulation itself generally applies to large waterworks, these warning and reporting obligations will generally not apply to small public and private water suppliers, as described above. Thus, commercial or institutional facilities which may serve large numbers of the public for prolonged periods of time will not be required to post warning notices, maintain public records, or submit quarterly reports.

Second, there are some inexplicable omissions and unjustifiable exclusions in the Regulation's warning and reporting obligations. For example, it is unclear why the section 10 warning requirement is limited to microbiological parameters when other substances (e.g. chemical or radiological) may also pose public health risks. If, for whatever reason, the owner is not carrying out the sampling and analysis prescribed in Schedule 2 of the Regulation for <u>any</u> health-based parameter, then this information should be immediately conveyed to users of the system so that they can decide what precautions, if any, should be taken. Similarly, it is unclear why the public records required under section 11 do not expressly include the engineers' reports required by section 13 of the Regulation. In the absence of an explicit cross-reference to section 13, it can be reasonably anticipated that some waterworks owners will refuse to disclose the engineers' reports on the grounds that they are not listed in section 11.

Third, there is some question about the limitations of the quarterly reports required under the Regulation. For example, the quarterly report provisions do not appear to require the waterworks owner to specifically identify and explain the nature, duration, magnitude or significance of exceedances of health-based parameters, or other instances of non-compliance with prescribed requirements or standards. Instead, all that is required by section 12 is a "summary" of any notices filed with the MOE and medical officer of health pursuant to section 8 of the Regulation. An MOE guidance document on quarterly reports offers some discussion of the suggested content of such reports.[318] However, for the purposes of accountability and enforceability, it would have been helpful for the Regulation (if not the OWRA) to require quarterly reports to more fully explain, in plain language, what happened, why, what steps were taken in response, and what further measures will be taken in the future to prevent a recurrence.

Similarly, it would have been helpful if the quarterly report (or at least a detailed summary) were distributed to users (e.g. with their water bills), as opposed to waiting for users to learn that they can request a copy of the report. Interestingly, Bill 96 proposed to require waterworks owners to provide summaries of all testing and sampling results to users with their water bills (section 3),

[318] MOE, "Technical Brief: Waterworks' Quarterly Reports to Consumers" (August 2000).

but this proposal was not enacted. In addition, it is unclear why the quarterly reports (or summaries thereof) are not required to prominently display warnings or other information for users who may be particularly vulnerable to waterborne disease through exposure to contaminants known or suspected to be present in the drinking water.

Fourth, there is increasing concern about the MOE's willingness to actually enforce these "right to know" provisions under the Regulation. For example, anecdotal evidence already suggests that some municipalities are refusing to provide public access to records required by the Regulation. Similarly, the MOE has confirmed that 35 waterworks owners failed to submit the first quarterly reports, which were due by October 30, 2000. This non-compliance rate prompted then Environment Minister Dan Newman to remark that MOE investigators "will consider prosecutions on a case-by-case basis", and that "the government and the Ministry are determined to ensure that every single water treatment facility and municipality is in compliance".[319] To date, however, it is unknown whether the MOE has laid charges against even a single waterworks owner for failing to comply with the quarterly reporting requirement or any other provision of the Regulation.

In any event, the limited scope of Ontario's current "community right to know" provisions become readily apparent by examining such provisions in other jurisdictions. For example, the U.S. *Safe Drinking Water Act* initially included provisions that required public water system operators to notify consumers where there was a failure to meet a prescribed standard, or where prescribed monitoring was not carried. The 1996 amendments to the Act expanded the "community right to know" by requiring the annual preparation and distribution of annual consumer confidence reports. In particular, each community water system must annually mail such reports to consumers, and the reports must address the following matters;

- information on the drinking water source;
- plain language definitions of key terms under the Act;
- identification and discussion of any regulated contaminants detected in the drinking water system;
- discussion of any violations of prescribed standards for regulated contaminants, and any related public health concerns;
- compliance status (e.g. variance or exemptions to prescribed standards);
- monitoring of unregulated contaminants (e.g. *Cryptosporidium* and radon);
- direction to contact the Agency for further information; and
- additional information as may be appropriate for public education.

[319] MOE, "News Release: 35 Water Treatment Facilities Fail to Meet Reporting Requirements: Newman" (November 17, 2000).

Under the Act, systems serving less than 10,000 persons may be relieved against the requirement to mail the reports. In such cases, however, the system operator must inform consumers through newspaper notice that the reports will not be mailed out (but are available upon request) and will be published in one or more newspapers. Systems serving less than 500 persons may elect to simply notify customers by mail that the report is available upon request.

Similarly, in Australia, the New South Wales government enacted the 1994 *Sydney Water Act*, which creates both statutory and contractual "rights to know" for consumers, as discussed above in Part II of this Paper. In addition, the Sydney Water Corporation is required to prepare annual reports on all routine water quality testing results, and is further required to post consumer confidence reports on the internet every three months. Such electronic reports are to include:

- details of water quality and quantity within the catchment areas;

- evaluations of the Corporation's effectiveness in water treatment;

- literature reviews regarding drinking water developments; and

- overview of issues related to catchment management.

The use of electronic means to collect and publicly disseminate drinking water information has been passed or proposed in other jurisdictions. In England, for example, it is mandatory for the government to post a centralized water database on the internet. In Ontario, Bill 96 proposed a similar duty on the MOE to establish and operate a "water quality registry", which, among other things, would be used to compile all test results submitted to the MOE, and to contain copies of all approvals issued to public water suppliers (section 6).

Although the MOE's current web site contains considerable drinking water information, neither the OWRA nor the Drinking Water Regulation actually requires that this web site be maintained for such purposes. It should be further noted that the existing EBR Registry also does not currently serve these purposes. Significantly, the Environmental Commissioner of Ontario has expressly recommended that the MOE establish "a publicly accessible data management system, including water well records, monitoring information, complaints, inspections and enforcement, and information about contamination and remediation".[320]

In summary, Ontario's current "community right to know" requirements are somewhat rudimentary and incomplete. As discussed above, the requirements of the Drinking Water Protection Regulation offer a good starting point, but they should be clarified, expanded and placed upon a firm legislative basis in Ontario's drinking water statute.

RECOMMENDATION #11: Ontario's drinking water statute should fully entrench "community right to know" principles, and in particular, should include provisions that require:

[320] Environmental Commissioner of Ontario, *Annual Report 1996: Keep the Doors Open to Better Environmental Decision Making*, at page 44.

(a) immediate public notice through appropriate means (e.g. news media, signs, internet, etc.) whenever:

(i) exceedances of prescribed standards or indicators of adverse water quality are detected including "presumptive" results;
(ii) treatment or testing equipment is inoperative or malfunctioning; or
(iii) required sampling and analysis is not being carried out;

(b) preparation of comprehensive consumer confidence reports which are to be mailed to all consumers on an annual basis, and which address the following matters:

(i) source assessment/protection;
(ii) discussion of any regulated contaminants or unregulated substances detected in the raw or treated water;
(iii) discussion of any violations of contaminant limits or prescribed standards, and related public health concerns, particularly for vulnerable persons; and
(iv) discussion of the steps taken to address such violations, and measures proposed to prevent any future violations; and

(c) require the Drinking Water Commission (or Minister) to establish and maintain an electronic drinking water registry that summarizes consumer confidence reports, discusses issues and trends arising from such reports, and otherwise serves as a public repository for significant drinking water information (e.g. approvals, prosecutions and orders, State of Drinking Water Reports, etc.).

(j) Provincial Monitoring and Reporting

Under Ontario's current legal regime, the Minister is not under any mandatory duty to undertake provincial monitoring or reporting regarding drinking water matters. For example, neither the OWRA nor the Drinking Water Protection Regulation requires the Minister to prepare or table "State of Ontario's Drinking Water" reports, or to conduct monitoring programs at the provincial level regarding drinking water quality or quantity. Similarly, there is no legal duty on the MOE to aggregate, analyze or discuss the quarterly reports submitted by public water suppliers. This type of broad-scale analysis/reporting would clearly assist the MOE – and Ontarians – in understanding the nature, number and causes of exceedances of health-based parameters, and in identifying trends, issues and challenges regarding drinking water across the province.

It should be noted that the MOE, in its discretion, has undertaken certain types of *ad hoc* provincial monitoring and reporting. For example, the MOE has undertaken a "Drinking Water Surveillance Program", which monitors and reports upon a subset of public water systems across Ontario each year. Significantly, however, this program stopped testing for E. coli and other microbial contaminants in 1996. From time to time, the MOE has prepared statistical summaries

of these reports,[321] and has made them available through the MOE web site. While such initiatives are commendable and should be continued, the fact that there is no legal duty to do so means that the MOE can, at any time, scale down or even eliminate such monitoring and reporting programs without legal consequences.

Ontario's discretionary approach to provincial monitoring and reporting stands in contrast to other jurisdictions which have proposed or passed statutory provisions which require drinking water officials to monitor and publicly report upon drinking water matters. For example, British Columbia's recently enacted *Drinking Water Protection Act* requires the appointment of provincial "drinking water coordinators" who, among other things, are compelled to prepare annual reports on activities under the Act. These reports must be tabled in the Legislative Assembly if in session, or otherwise must be filed with the Clerk of the Legislative Assembly.

Similarly, the U.S. *Safe Drinking Water Act* imposes a number of mandatory monitoring/reporting duties upon the Administrator of the Environmental Protection Agency. For example, the Act requires the Administrator to file annual reports with two congressional committees[322] in order to outline the Agency's activities under the legislation and to make recommendations as may be necessary. In addition, the Administrator is empowered and, in some cases, required by the Act to undertake specific monitoring/reporting activities, as discussed below in the context of drinking water research and assistance programs.

In England, the Drinking Water Inspectorate carries out audits and inspections of water suppliers, and publicly releases reports on the suppliers' performance, including recommendations for improvements. This reporting is done on an annual basis, although the relevant EU Directive only requires reports on the state of drinking water once every three years. Similarly, in New South Wales, operational audits are required and publicly released in relation to the water supplier's performance in meeting licence requirements and standards, as discussed above in Part II of this Paper.

In summary, the value and importance of provincial monitoring and reporting is well-recognized, and has prompted Ontario to impose such duties upon the Provincial Auditor regarding fiscal matters, and upon the Environmental Commissioner for general environmental matters. However, no such duty has been imposed by law upon the Minister regarding drinking water matters. Accordingly, Ontario's drinking water statute should impose a mandatory duty upon the Drinking Water Commission (or Minister) to undertake provincial monitoring and reporting programs for the purposes of accountability.

RECOMMENDATION #12: Ontario's drinking water statute should contain provisions that require the Drinking Water Commission (or Minister) to:

(a) prepare and file annual "State of Ontario's Drinking Water Reports" in the Legislative Assembly; and

[321] See, for example, MOE, *Drinking Water in Ontario: A Summary Report 1993-97* (2000).
[322] The Senate Committee on Commerce, Science and Transportation, and the House of Representatives Committee on Energy and Commerce.

(b) establish and maintain provincial monitoring programs on drinking water matters, such as:

(i) quality and quantity of surface water and groundwater sources of drinking water;
(ii) sources of contamination of drinking water;
(iii) new or emerging pathogens and substances that may be present in drinking water and that may pose a threat to public health and safety in Ontario; and

(iv) compliance by water suppliers with parameter limits and other prescribed standards.

(k) Investigation and Enforcement

The substantive requirements of any legal regime are as only as good as the provisions relating to investigation and enforcement of such requirements. Unless adequate tools for investigation and enforcement are built into law, then any prohibitions established by law amount to little more than a paper tiger since there is no meaningful threat of judicial or administrative proceedings to ensure compliance. Moreover, there must be an institutional willingness (e.g. stringent compliance policies) and capability (e.g. adequate staff and resources) to undertake timely and effective investigation and enforcement efforts.

Ontario's current legal regime does contain some useful mechanisms for the investigation and enforcement regarding environmental offences that may affect drinking water. For example, both the OWRA (section 30) and the EPA (section 14) create general prohibitions that may be enforced through prosecution. Both Acts also empower MOE officials to issue legally binding orders against persons responsible for environmental harm, and both laws require compliance with the terms and conditions attached to licences, permits or approvals issued under the legislation. In addition, the MOE has developed policy guidelines regarding compliance matters,[323] and has established the special Investigations and Enforcement Branch for environmental law enforcement purposes. All of the foregoing components of Ontario's legal regime were in place prior to the Walkerton tragedy, but they manifestly failed to avert the tragedy.

Accordingly, there are a number of concerns about the enforceability of Ontario's current legal regime with respect to drinking water safety. First, as described below, Ontario's current legal regime lacks specific drinking water prohibitions that have been passed or proposed in other jurisdictions. For example, some jurisdictions have enacted special drinking water laws that specifically prohibit the supply of unsafe drinking water and/or the pollution of drinking water systems. Such broad prohibitions have not been entrenched in Ontario, which means that MOE officials are more limited in their enforcement options since they can only address drinking water safety through environmental laws of general application.

[323] See, for example, MOE, "Compliance Guideline" (Guideline F-2, rev. 1995).

Second, the MOE's decision to investigate and enforce remains almost wholly discretionary.[324] In particular, there is no mandatory duty upon the MOE to investigate and enforce anything by way of prosecution, administrative order, or both. In the Walkerton case, for example, it appears that Well #5 was constructed without approval in 1978, and although prosecution was threatened, it was never undertaken and *ex post facto* approval was granted by the MOE. Even then, there appears to have been non-compliance with a term of the approval that required construction of a new pipe from the pumphouse to ensure fifteen minutes of chlorine contact time. Again, this apparent non-compliance did not trigger any prosecutions or orders by the MOE. It also appears that Well #5 was drawing water without the Permit to Take Water required by the OWRA. Once again, this approval was granted by the MOE *ex post facto*, and no prosecution was undertaken in respect of this non-compliance.

More recently, MOE inspectors in the 1990s detected a number of instances of non-compliance by the Walkerton's public utility with respect to drinking water requirements, but the MOE failed to prosecute or issue orders in respect of these matters. Indeed, two years before the Walkerton tragedy, an inspector recommended that the MOE undertake mandatory measures (e.g. issue an order or direction under the OWRA) to bring the utility into compliance, but this recommendation was rejected by her superior, who preferred "voluntary abatement" and decided to send a sternly worded letter to the manager of the Walkerton utility.[325] Only after the Walkerton tragedy occurred did the MOE issue field orders against the Walkerton utility in relation to drinking water matters.

The continuing lack of timely enforcement activities in the Walkerton situation clearly underscore the potential problems – and public health risks – associated with a regulatory regime that does not demand a strict, "zero tolerance" approach to non-compliance in drinking water matters. Indeed, several local officials in the Walkerton case have acknowledged that mandatory abatement action by the MOE likely would have prompted more timely and effective compliance efforts by the utility and its staff.[326]

Third, there is concern about the diminished role of the public in investigation and enforcement matters under the current drinking water regime in Ontario. At the present time, Ontarians who suspect that environmental offences have been committed can file formal "Applications for Review" under Part V of the EBR. Such applications are filed with the Environmental Commissioner, who forwards it to the appropriate Minister, who, in turn, is compelled to report back to the complainants within the prescribed timeframe. In some instances, it may be several months before the Ministry completes its investigation and reports back to the complainants. In the context of drinking water safety, where time is clearly of the essence to protect public health, investigation/response timeframes measured in months are clearly inappropriate.

More fundamentally, it should be recalled that the Minister is not actually compelled to investigate anything upon receipt of an EBR application, and he or she is free <u>not</u> to investigate

[324] *Ibid.* The MOE's "Compliance Guideline" lists a number of factors to take into account when MOE officials are considering the use of voluntary or mandatory abatements tools, but ultimately the decision on which tools (if any) to be used remains within the discretion of the MOE officials.
[325] See, for example, the Part 1A testimony of Ms. Michelle Zillinger and Mr. Phil Bye at the Walkerton Inquiry.
[326] See, for example, the Part 1A testimony of Mr. Jim Keiffer and Mr. David Thomson at the Walkerton Inquiry.

the matters complained of in certain circumstances (section 77(2) and (3)). Moreover, even in those relatively rare situations where the Minister proceeds with the requested EBR investigations, very few ultimately result in MOE prosecutions or orders, even where offences have been confirmed by investigators.[327]

Under the EBR, filing an Application for Review (and waiting for an MOE response months later) is generally required before Ontarians can go to court using the new civil cause of action under Part VI of the EBR. However, the EBR's new statutory cause of action is intended to protect "public resources", not drinking water *per se*, from "significant harm", as described above in Part I of this Paper. Thus, the availability of the EBR right to sue is largely limited to situations where "public resources" (e.g. groundwater or surface water) are being "significantly harmed" as a direct result of a contravention of a prescribed law, regulation or instrument (section 84(1)). Because of the EBR's focus on the natural environment, it seems unlikely that the EBR right to sue applies to water once it has been removed from the outdoors and transported through drinking water treatment, storage or distribution systems, particularly if they were privately owned.

Similarly, the restrictive language of the EBR right to sue seems unlikely to catch Walkerton situations, where, for example, a failure to take water tests or to properly monitor may constitute a contravention of a prescribed regulation (or instrument), but it may not, in and of itself, cause "significant harm" to a "public resource" within the meaning of the EBR. Indeed, the EBR cause of action may not even address situations involving non-point sources of pollution that are largely unregulated (e.g. manure disposal in accordance with normal farming practices), provided that there are no actual or imminent contraventions of environmental laws. In any event, on a more practical level, the rather cumbersome constraints and conditions precedent imposed by the EBR on "public resource" lawsuits have resulted in negligible use of this new right to sue.

In addition, it should be noted that the EBR right to sue does not allow plaintiffs to recover monetary damages (section 93(2)). Thus, if Ontario residents suffer loss or injury as a result of unsafe drinking water, they cannot use the EBR cause of action in order to obtain compensation. Instead, aggrieved residents would have to plead and prove causes of actions (e.g. common law or statutory) that may be available on the facts (e.g. negligence), but that were not necessarily developed to specially address drinking water concerns. To remedy this situation, Bill 96 (and the preceding private members' bills in Ontario) proposed to create a new civil cause of action for damages against persons who contravene drinking water legislation, regulation, or certificates of approval. However, such proposals have not been enacted to date. As an alternative, consideration could be given to the "consumer contract" approach used in Australia, where legislation provides water customers with certain statutory remedies (e.g. rebates, compensation, injunctive relief) for breaches of water supply contracts.

In any event, for the foregoing reasons, it cannot be seriously contended that EBR Applications for Investigation, or EBR "public resource" lawsuits, serve as an adequate basis for public involvement in the investigation and enforcement of drinking water complaints. Indeed, it should be pointed out that the EBR was in place for years prior to the Walkerton tragedy, but it

[327] See the Annual Reports filed by the Environmental Commissioner of Ontario.

played absolutely no role in preventing or responding to the crisis. Thus, while the EBR regime may offer the public some assistance in general environmental matters, the EBR's utility and value in the drinking water context is questionable at best, primarily because it was not drafted to specifically address drinking water concerns.

Significantly, other jurisdictions have passed or proposed provisions that significantly enhance the public rights in relation to investigation and enforcement of drinking water matters. For example, British Columbia's recently enacted *Drinking Water Protection Act* enables concerned citizens to request investigations of suspected threats to their drinking water. Unlike Ontario's EBR, such investigation requests go directly to specially appointed "drinking water officers", who must review and respond to such requests. Part 4 of the B.C. Act also empowers drinking water officers to issue a wide range of orders to: abate "drinking water health hazards"; require drinking water hazard remediation or prevention plans; require measures to bring the orderee into compliance; and take direct action (and recover costs) if there is default under such orders.

Similarly, citizen access to the courts is entrenched in the U.S. *Safe Drinking Water Act*. This Act (like many federal environmental statutes in the U.S.) contains a "citizens' suit" provision, which as been framed as follows:

> Any person may commence a civil action on his own behalf,
>
> (1) against any other person (including (A) the United States, and (B) any other government instrumentality or agency…) who is alleged to be in violation of any requirement prescribed by or under this subchapter;
> (2) against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under this subchapter that is not discretionary with the Administrator; or
> (3) for the collection of a penalty by the United States Government (and associated costs and interest) against any Federal agency that fails, by the date that is 18 months after the effective date of an order to pay a penalty assessed by the Administrator under [section 300j-6 (administrative penalty orders)].

Interestingly, the Act also empowers the Administrator of the Environmental Protection Agency to impose administrative penalty orders against any federal agency that violates the Act. These civil penalties can order agencies to pay up to payment of $25,000 per day per violation.

In England, the Drinking Water Inspectorate has a *Code of Enforcement* that, among other things, specifies what actions its officials will take in relation to different drinking water incidents. Orders are used to promptly address operational concerns identified through the Inspectorate's monitoring and inspection activities, but a number of high-profile prosecutions have also been undertaken in England where a water supplier supplied unsafe drinking water and failed to exercise due diligence. In recent years, the Inspectorate has used audits and random, unannounced inspections in order to address problems such as falsifying test results, or failing to test at all.

In Ontario, governmental investigation and enforcement activities regarding drinking water offences would be significantly enhanced by the development of a compliance manual that specifically targets drinking water contraventions. The province's current enforcement policies are written at a general level and tend to lump most environmental offences under provincial law into broad categories without adequately highlighting or addressing drinking water offences in particular. In addition, these policies are replete with highly discretionary language, leaving MOE officials with considerable room not to pursue mandatory abatement measures even where they are clearly warranted on the facts.

Accordingly, the Drinking Water Commission (or Minister) should develop (with public input) an appropriate compliance manual that entrenches the "zero tolerance" approach described above, and that contains prescriptive direction on when mandatory abatement measures must be taken to protect drinking water safety and public health. Such a manual would remove much of the uncertainty, unpredictability and inconsistency regarding drinking water enforcement across the province, and it would enhance accountability for enforcement (or non-enforcement) of Ontario's drinking water statute. To ensure that such a manual is actually developed within a reasonable timeframe, Ontario's drinking water statute should place a positive duty upon the Drinking Water Commission (or Minister) to produce the required manual (with public input) by a specified deadline.[328]

It should be noted, however, that requiring the development of an appropriate compliance manual begs the fundamental question of whether public entities (such as the Drinking Water Commission or MOE) should still be involved in investigation and enforcement activities regarding drinking water offences. It may be suggested that in light of the Walkerton tragedy, it is time to consider alternative delivery strategies for environmental investigation and enforcement, such as creating a private corporate entity analogous to the Technical Standards and Safety Association ("TSSA"), which has recently assumed delegated enforcement responsibilities from the Ministry of Consumer and Commercial Relations.

In response to this suggestion, it should be noted that no other jurisdiction has elected to delegate investigation and enforcement responsibilities regarding drinking water matters to private corporate entities. Second, even where such corporate entities have been used for other matters (e.g. TSSA), there is little empirical evidence to suggest that such approaches result in faster, better or more efficient compliance activities. Third, there are a number of serious concerns about the political, legislative, administrative and fiscal accountability of using private entities to enforce public laws.[329] Unless these fundamental concerns can be adequately addressed, it remains highly preferable to retain investigation and enforcement responsibilities for drinking water matters in public hands.

[328] This was the approach taken in Ontario's *Crown Forest Sustainability Act*, which obliged the Ministry of Natural Resources to produce key implementation manuals within specified periods.

[329] Winfield et al., *The "New Public Management" Comes to Ontario: A Study of Ontario's Technical Standards and Safety Authority and the Impacts of Putting Public Safety in Private Hands* (CIELAP, 2000).

RECOMMENDATION #13: Ontario's drinking water statute should contain provisions that:

(a) impose a positive duty on the Drinking Water Commission (or Minister) to enforce the provisions of the statute on a "zero tolerance" basis;

(b) impose a positive duty on the Drinking Water Commission (or Minister) to develop (with full public input) a compliance manual to provide detailed direction regarding the investigation and enforcement of drinking water provisions under the statute;

(c) establish a broad range of mandatory abatement tools, including administrative penalties, stop orders and emergency orders;

(d) create a streamlined right for Ontarians to require (not just request) investigations of suspected contraventions of drinking water requirements;

(e) create a "citizens' suit" mechanism that allows Ontarians to enforce drinking water requirements in civil court; and

(f) create a new cause of action for persons who suffer loss, injury or damage as a result of a contravention of the statute or the regulations thereunder.

(l) Prohibitions and Penalties

As described in Part I of this Paper, Ontario's current legal regime contains a number of general prohibitions, scattered across a number of different statutes, which are collectively intended to protect drinking water systems and safeguard public health and safety.

For example, the *Environmental Protection Act* prohibits the discharge of contaminants into the natural environment that cause, or are likely to cause, adverse effects (section 14). Similarly, the *Ontario Water Resources Act* prohibits the discharge of polluting materials into or near water (section 30). In addition, the federal *Fisheries Act* prohibits the deposit of "deleterious substances" into water frequented by fish (section 36(3)). Large fines and other penalties may be imposed in respect of contraventions under these general prohibitions.

With respect to drinking water in particular, there are few specific prohibitions that universally protect drinking water (or its sources) in Ontario. For example, the *Public Utilities Act* prohibits persons from depositing "injurious" or "offensive" substances into water or waterworks, and from damaging the waterworks and pipes (section 13). It would appear, however, such provisions apply only to waterworks owned or operated by public authorities, and thus would not apply to private waterworks or private individual wells.

Similarly, Ontario's new Drinking Water Protection Regulation creates no new offences *per se*, but imposes a number of mandatory testing, treatment and reporting duties that may be enforced

through the general offence provisions of the *Ontario Water Resources Act*. Interestingly, the Act has recently been amended to provide higher fines for contraventions of regulatory requirements regarding drinking water treatment and notification of adverse drinking water quality.[330] However, the statutory amendments did not create any new offences regarding drinking water and its sources.

Thus, it appears that Ontario's current legal regime contains remarkably few prohibitions that are aimed specifically at protecting drinking water and its sources. To remedy this long-standing situation, the various private members' bills introduced in Ontario to establish safe drinking water legislation included prohibitions against supplying unsafe drinking water and polluting drinking water systems. Like most environmental offences in Canada, these drinking water prohibitions were framed as "strict liability" offences, meaning that the prosecution would not have to prove *mens rea* (guilty mind or intent) on the part of the defendant. Instead, the prosecution must only demonstrate the *actus reus* (prohibited act) beyond a reasonable doubt. If this is proven, then the onus would shift to the defendant to avoid liability by satisfying the court that he or she exercised due diligence (reasonable care) to avoid the commission of the offence.[331]

Ontario's most recent private member's bill (Bill 96) framed drinking water prohibitions as strict liability offences in the following manner:

> 7. (1) No public water supplier shall cause or permit to be supplied to users water that,
>
> (a) exceeds the maximum permitted level for any contaminant or substance; or
>
> (b) contravenes a prescribed standard.
>
> (2) No person shall deposit in, add to, emit or discharge into a public water system or a private water system any thing so as to cause the water to,
>
> (a) exceed the maximum permitted level for a contaminant or substance; or
>
> (b) contravene a prescribed standard (emphasis added).

Bill 96 provided for $1 million fines and restraining orders in respect of such contraventions. However, Bill 96 was not enacted, as described above.

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[330] *Toughest Environmental Penalties Act, 2000*, S.O. 2000, c.22 (Royal Assent November 21, 2000), section 2. This section provides for fines up to $6 million for a first conviction and $10 million for subsequent convictions. It remains to be seen whether these provisions will be actively enforced by the MOE, and whether the courts will be willing to impose fines at or near these prescribed maximum levels.

[331] Generally, see Saxe, *Environmental Offences* (Canada Law Book, 1990); Swaigen, *Regulatory Offences in Canada* (Carswell, 1992); and Hughes, "The Reasonable Care Defences" (1992), 2 *Journal of Environmental Law and Practice* 214..

Bill 96's proposed strict liability offences are somewhat broader than those found in the U.S. *Safe Drinking Water Act*, which simply prohibits persons from "tampering" with public water systems. The U.S. Act, however, goes on to also prohibit persons from "attempting" or "threatening" to tamper with a public water system. "Tampering" is defined as the introduction "of a contaminant into a public water system with the intention of harming persons", or the interference "with the operation of a public water system with the intention of harming persons". Because of this explicit *mens rea* requirement, it appears than the U.S. prohibition would catch deliberate acts (e.g. terrorist activities) that were specifically intended to harm persons using public water systems. However, the prohibition would not necessarily catch careless or negligent acts (e.g. agricultural runoff) that were not specifically intended to harm persons using public water systems. Under the U.S. Act, fines, civil penalties, and imprisonment up to five years may be imposed for contraventions of the "tampering" prohibition.

In contrast to the U.S. approach, British Columbia's recently enacted *Drinking Water Protection Act* frames its drinking water offences on a strict liability basis. In particular, the B.C. legislation contains a number of offences that go beyond the simple prohibitions proposed in Ontario's Bill 96. For example, the B.C. legislation:

- imposes a duty on "water suppliers"[332] to provide users with drinking water that is "potable"[333] and that meets regulatory requirements (section 6);

- imposes a duty to report "threats" to drinking to the drinking water officer who, in turn, may request or order public notice of the threat (sections 13 and 14);

- prohibits persons from introducing anything "into a domestic water system[334], drinking water source, a well recharge zone or an area adjacent to a drinking water source" that results, or is likely to result, in a drinking water health hazard (section 23(1)); and

- prohibits persons from destroying, damaging, opening, closing, or tampering with any part of a domestic water system (or introducing anything into a domestic water system, drinking water source, well recharge zone, or area adjacent to a drinking water source) if it is "reasonably forseeable that, as a result, the owner of the domestic water system would have to limit the use of the water provided by the system on the basis that there may be a risk of a drinking water health hazard" (section 23(2)).

Contraventions of any of these provisions represent offences that may be punishable by fines and/or imprisonment (section 45(1) and (2)). Additional sentencing authority (e.g. prohibition, restoration orders, expense reimbursement, community service, etc.) is found under B.C.'s

[332] "Water supplier" is defined as the owner of a "water supply system", which is further defined as a "domestic water system" that serves more than one single family residence: *Drinking Water Protection Act* (Bill 20), section 1.
[333] "Potable water" is defined as "water provided by a domestic water system that (a) meets the standards prescribed by regulation; and (b) is safe to drink and fit for domestic purposes without further treatment": *Drinking Water Protection Act* (Bill 20), section 1.
[334] "Domestic water system" is defined as "a system by which water is provided or offered for domestic purposes [eg. human comsumption, food preparation, sanitation, household purposes]", including works, equipment, facilities, intake water and water in the system: *Drinking Water Protection Act* (Bill 20), section 1.

Health Act (section 45(3)). In addition, amendments to B.C.'s *Water Act* would prohibit persons from operating wells in a manner that causes or is likely to cause a significant adverse impact on groundwater quality or other well users. These amendments would further prohibit persons from introducing foreign matter (e.g. refuse, human or animal waste, pesticides or fertilizers, construction debris, etc.) into wells.

In light of these developments in other jurisdictions, it is clear that there is room for considerable improvement in Ontario's current legal regime. At the present time, the province's environmental laws contain general prohibitions that are not specifically aimed at drinking water protection. The Drinking Water Protection Regulation does contain certain testing, treatment and reporting duties that may be enforced through the general offence provisions of the *Ontario Water Resources Act*. However, such provisions do not displace or dispense with the need to entrench carefully crafted prohibitions that go beyond testing, treatment and reporting duties.

In particular, Ontario's drinking water statute should create various "strict liability" offences and should impose severe penalties for contraventions of such offences, including jail terms for the most serious offences (e.g. causing actual impairment of drinking water quality, or causing actual harm to any user of the drinking water system). To enhance the deterrent value of fines, the Act should impose minimum fines (not just large maximum fines which rarely, if ever, get imposed) so that potential defendants know that, at the very least, they will face mandatory minimums if caught and convicted.[335]

RECOMMENDATION #14: Ontario's drinking water statute should include:

(a) broad, "strict liability" offences that prohibit:

(i) owners/operators of public and private water treatment and distribution systems from providing users with drinking water that exceeds permitted contaminant levels or contravenes prescribed standards;

(ii) owners/operators of public and private water treatment and distribution systems from contravening the terms or conditions imposed under statutory approvals for such systems;

(iii) owners/operators of public and private water treatment and distribution systems from submitting false information or reports required by law;

(iv) owners/operators of public and private water treatment and distribution systems from failing to report threats to drinking water quality to the Minister and/or public health officials;

[335] Minimum fines already exist for certain offences under the *Environmental Protection Act* (section 193), but not under the *Ontario Water Resources Act.*

(v) any person from causing or permitting the release of contaminants into or near waterworks, drinking water sources, wells or well recharge areas, or attempting or threatening to do so;[336] or

(vi) any person from damaging, destroying, altering, or otherwise tampering with waterworks or wells, or attempting or threatening to do so; and

(b) severe penalties for contraventions, including:

(i) minimum fines for a first conviction;

(ii) maximum fines of not more than $6 million for a first conviction;

(iii) significant higher fines for subsequent offences, or for offences where the health of any person has been impaired as a result of the contravention;

(iv) jail terms for serious offences, such as where the health of any person has been impaired as a result of the contravention;

(v) stripping of any profits or monetary benefits acquired or gained by the defendant through the contravention;

(vi) orders of prohibition, restitution, or restoration, including orders to provide an alternate drinking water supply; and

(vii) such further orders or conditions that are necessary to prevent further offences or to contribute to the rehabilitation of the defendant.

(m) Funding, Research and Technical Assistance

Under Ontario's current regime, the Minister is under no express legal duty to undertake, commission or fund drinking water research programs, technical assistance programs, or financial assistance programs. Under the *Ontario Water Resources Act*, for example, the Minister is given general administrative responsibility for the Act (section 3). The Act further states that the "function" of the Minister is to "conduct research programs" and to "disseminate information and advice" regarding the collection, treatment, storage and distribution of water, and he or she is empowered to do so (section 10). However, it does not appear to be mandatory for the Minister to establish or maintain any specific drinking water programs, and it is open to the Minister to reduce, limit or even discontinue water research and assistance programs in his or her discretion.

[336] For such an offence, it may be necessary to recognize a limited "statutory authority" defence for situations where, for example, a company is lawfully discharging contaminants into the environment in accordance with its Certificate of Approval, but then there should be an express power to the Ministry of the Environment / Director to amend or withdraw that Certificate of Approval permitting the emission.

In fact, this is precisely what has happened in recent years in Ontario as some important water-related programs have been significantly modified, reduced or wholly eliminated.[337] In addition, four of five MOE water testing laboratories were closed in 1996, and numerous MOE water personnel (e.g. hydrologists, hydrogeologists, etc.) were laid off. In light of such sweeping cutbacks and program changes, it is difficult to understand how the Minister can properly discharge his or her "function" under the *Ontario Water Resources Act.*

In any event, to remedy such situations, Bill 96 proposed a mandatory duty on the Minister to conduct research programs, as follows:

> 13. The Minister shall cause research to be conducted on,
>
> (a) the causes, diagnosis, treatment, control and prevention of health effects associated with contaminants and with failure to adhere to prescribed standards;
> (b) the quality, quantity and availability of water from private water systems;
> (c) the sources of surface and ground water contamination;
> (d) methods of purifying drinking water; and
> (e) methods of conserving water (emphasis added).

In addition, Bill 96 proposed to require the Minister to test water from private water systems at the request of users of such systems (section 14). Similarly, Bill 96 empowered the Minister to establish a "Safe Drinking Water Fund" to provide technical and financial assistance to public water suppliers for improving drinking water quality, improving delivery systems, employee training, and source assessment/protection programs (section 19). However, Bill 96 was not enacted, which currently leaves such matters in the discretion of the Minister.

Ontario's largely discretionary approach stands in sharp contrast to the numerous research/ assistance duties and powers specified under the U.S. *Safe Drinking Water Act*. Under the Act, some duties upon the Administrator of the Environmental Protection Agency are framed in mandatory terms, such as provisions which compel the Administrator to study and report upon the following matters:

- contamination of actual or potential sources of drinking water by PCBs and other substances known or suspected to be harmful to public health, and means of removing, treating or controlling such contamination;

- waste disposal that may endanger groundwater serving as supply for public water systems;

- methods of underground injection which do not degrade groundwater sources of drinking water;

[337] Such programs include: Municipal Assistance Program; Great Lakes clean up program; training programs for water treatment staff; Green Communities Program; and Clean Up Rural Beaches (CURB) program.

- methods of detecting and controlling surface spills of contaminants which may degrade underground sources of drinking water;

- virus contamination of drinking water sources and means of controlling such contamination;

- intensive application of pesticides and fertilizers in underground water recharge areas;

- the nature, source, extent and means of control of contamination by chemicals and suspected carcinogens in public water supplies and sources;

- chlorination by-products and effects on human health;

- groups of people within the general population who may be at greater risk of adverse health effects from exposure to drinking water contaminants;

- mechanisms by which chemical contaminants are absorbed, distributed, metabolized and eliminated from the human body;

- toxicological and epidemiological study of harmful substances in drinking water; and

- occurrence of waterborne disease.

Similarly, the Act requires the Administrator to provide and fund training for State enforcement personnel, persons who manage or operate public water systems, and persons involved in the public health aspects of providing safe drinking water. Since 1974, hundreds of millions of dollars in public funds have been appropriated to carry out these mandatory research/assistance provisions. In addition, the Administrator is required to ensure that technical assistance is available in each State for small water systems to achieve compliance with national drinking water standards. Similarly, the Administrator (in conjunction with the Director of the Centres for Disease Control and Prevention) is required to establish a national health care provider training and public education campaign about waterborne disease caused by infectious agents such as microbial contaminants. The Administrator must also provide funds to States for local educational agencies to test for, and remedy, lead contamination in school drinking water.

Other research/assistance powers under the U.S. legislation are framed in optional terms, such as provisions that give legislative authority to the Administrator to:

- undertake general research, studies or demonstrations regarding public health and drinking water;

- provide grants or technical assistance in respect of emergency situations affecting public water systems;

- provide grants and loans for certain State programs (e.g. public water system supervision, underground water source protection, etc.);

- provide financial assistance in respect of demonstration projects under New York City's watershed protection program;

- provide grants to special study and demonstration projects regarding technology improvements and treatment/recycling/reuse of wastewater;

- provide grants to other public sector agencies for technological research and development;

- provide technical and financial assistance for infrastructure construction/improvement and watershed management programs; and

- enter into agreements with States to establish revolving loan funds (e.g. capitalization grants or letters of credit).

In comparison to the above-noted provisions (many of which are mandatory) under the U.S. *Safe Drinking Water Act*, Ontario's current regime is clearly incomplete (if not entirely deficient) with respect to drinking water research and technical/financial assistance programs. To ensure that drinking water requirements are properly implemented by small and large waterworks, Ontario's drinking water statute should follow the U.S. lead by imposing mandatory duties in respect of drinking water research and technical/financial assistance programs.

RECOMMENDATION #15: Ontario's drinking water statute should establish a mandatory duty upon the Drinking Water Commission (or Minister) to:

(a) undertake and fund research programs such as:

(i) identification, treatment and prevention of adverse public health effects from drinking water contaminants;

(ii) quality and quantity of water available to public and private water suppliers in Ontario;

(iii) current and future sources of drinking water contaminants, including unregulated substances;

(iv) controlling or avoiding the effects of intensive farming on sources of drinking water;

(v) identifying and protecting Ontarians who may be at special risk of waterborne disease;

(vi) watershed management and source protection measures; and

(vii) water conservation; and

(b) establish and fund programs that provide technical and financial assistance to owners/operators of public or private water treatment and distribution systems in order to:

(i) install, construct or upgrade equipment in the waterworks (or related infrastructure) in order to meet drinking water standards;

(ii) implement water conservation plans or programs;

(iii) undertake source assessment/protection programs; and

(iv) employee training;

(n) Advisory Mechanisms

Under Ontario's current legal regime, there is no multi-stakeholder advisory committee that can assist the Minister in protecting drinking water and its sources. As described above, the highly regarded Advisory Committee on Environmental Standards ("ACES") was abolished in 1995,[338] and no other general or special advisory committee has been established in relation to drinking water matters.

To remedy this situation, Bill 96 included provisions that would have established a multi-stakeholder "Water Advisory Council" in Ontario.[339] Under Bill 96, members of the ten person Council were to be selected on the basis of their "competence and knowledge in matters relating to drinking water quality" (section 11), and were to be given several important advisory functions:

> 12. The Water Advisory Council has the following duties:
>
> 1. To advise the Minister on the results of current research related to:
>
> (i) drinking water quality;
> (ii) prescribed standards;
> (iii) contaminants and substances and their effects.
>
> 2. To consider any matter affecting drinking water quality that the Minister refers to the Council, or that the Council decides to consider on its own initiative, and to advise the Minister on the matter.

[338] The MISA Advisory Committee and the Environmental Assessment Advisory Committee were also abolished at the same time by the provincial government.
[339] Similarly, all other private members' bills to establish safe drinking water legislation in Ontario included proposals to establish an advisory committee.

However, during legislative debate on Bill 96, former Environment Minister Dan Newman dismissed the proposed Council as "red tape",[340] and Bill 96 ultimately was not enacted, as described above.

Characterizing a public advisory committee as "red tape" reflects a poor understanding of the value, purpose and function of such bodies in modern regulatory regimes. Moreover, Ontario's continuing failure to establish such a committee is clearly out of step with other jurisdictions that have created drinking water advisory committees to research and report upon drinking water matters.

For example, British Columbia's recently enacted *Drinking Water Protection Act* includes provisions which authorize the creation of drinking water advisory committees, and which amend the *Water Act* to authorize the creation of a groundwater advisory board. Similarly, New Jersey's legislation creates a "Drinking Water Institute", which conducts research and makes recommendations specifically related to the drinking water issues and needs facing New Jersey residents. In addition, the U.S. *Safe Drinking Water Act* establishes the National Drinking Water Advisory Committee, which must be consulted during regulation-making under the Act. Interestingly, the Act further specifies that of the Council's fifteen members, five are to be representatives of the general public, five are to be representatives of state and local agencies involved in public water supply, and five are to be representatives of private organizations or groups involved in public water supply.

In contrast, the composition of Canada's Federal-Provincial Subcommittee on Drinking Water is limited to representatives from federal, provincial and territorial governments. Thus, representatives of non-governmental organizations, academic institutions, or the drinking water industry do not serve as members of the Subcommittee. Accordingly, it cannot be seriously suggested that the mere existence of the Subcommittee eliminates the need for a multi-stakeholder advisory body in Ontario to address provincial drinking water issues and priorities.

Thus, Ontario's drinking water statute should require the establishment of a multi-stakeholder advisory committee to assist the Drinking Water Commission (or Minister) to carry out its duties and responsibilities under the law.

RECOMMENDATION #16: Ontario's drinking water statute should require the establishment of a public advisory committee to research and report upon drinking water matters to the Drinking Water Commission (or Minister).

3.3 Conclusions and Summary of Recommendations

Premier Michael Harris has asserted that the provincial government's "goal is to have the safest water in Canada".[341] Similarly, when introducing the new Drinking Water Protection

[340] *Hansard* (June 15, 2000).
[341] Office of the Premier, "News Release: Harris Government Action Plan to Improve Water Quality includes Tough New Regulation" (August 8, 2000).

Regulation, former Environment Minister Dan Newman committed to a "comprehensive approach to achieve our goal of the safest drinking water in Canada".[342]

However, Minister Newman also recognized that "changes" were needed to prevent a recurrence of the Walkerton tragedy, and that the requirements of the new Regulation were just "interim steps to strengthen the protection of Ontario's drinking water supply". At the same time, Minister Newman noted that "while the Ontario government has confidence in the ability of the current system to protect water supplies, there is always room for improvement".[343]

As noted above, there is considerable room for improvement in the current legal regime, notwithstanding the passage of the Drinking Water Protection Regulation. In particular, there are a number of outstanding gaps, flaws and shortcomings in current legal regime, which may be summarized as follows:

- regulatory responsibility for drinking water is highly fragmented and uncoordinated;

- there are a number of laws, regulations and policies which are inconsistent and/or conflict with the overall objective of protecting drinking water and its sources;

- the current legal regime lacks a paramountcy clause which ensures that drinking water considerations shall prevail in cases of conflict;

- the bulk of Ontario's drinking water requirements are set out in subordinate regulation, which lacks the legal weight, significance and longevity of legislation;

- the current legal regime contains few mechanisms to ensure provincial accountability for protecting drinking water and its sources;

- there is no specialized public agency whose only priority and focus is drinking water safety;

- the current legal regime does not generally apply to small waterworks, including those which provide drinking water to large numbers of people;

- the current legal regime lacks any legislative statement of purpose;

- the current legal regime does not recognize or create a substantive public right to clean and safe drinking water;

- there is no mandatory duty to set, review or revise drinking water regulations in order to protect public health and safety, including vulnerable persons;

[342] MOE, "News Release: Ontario Launches Consultation on Additional Measures for Drinking Water Protection" (August 9, 2000).
[343] MOE, "Notes for Remarks by Environment Minister Dan Newman: Press Conference on Walkerton Water Situation (Queen's Park)" (May 29, 2000).

- there is no mandatory duty to identify and evaluate new or emerging drinking water contaminants;

- public participation opportunities are limited in the approvals process for waterworks;

- the current legal regime fails to define "groundwater under the influence of surface water", and fails to specify that surface water treatment requirements apply in such situations;

- source water assessment and source water protection programs are not mandated by law;
- municipal officials lack the statutory powers to fully implement source water protection programs;

- "community right to know" provisions are limited;

- provincial level monitoring/reporting is discretionary;

- the current legal regime contains inadequate investigation and enforcement provisions;

- existing legal prohibitions and penalties are inadequate to protect drinking water safety;

- financial and technical assistance programs for drinking water are discretionary and incomplete; and

- no multi-stakeholder drinking water advisory committee exists in Ontario.

Accordingly, if the Ontario government is serious about strengthening the protection of the province's drinking water so that it is "the safest in Canada", then Ontario should enact safe drinking water legislation in accordance with the following recommendations:

RECOMMENDATION #1: Ontario should, to the greatest possible extent, entrench drinking water provisions into a single, integrated statute, rather than in regulation or policy. This statute should contain a paramountcy clause that provides that in cases of conflict between drinking water provisions and any other general or special Act, the drinking water provisions shall prevail to the extent of the conflict.

RECOMMENDATION #2: Ontario should systematically review and, where necessary, revise provincial laws, regulations and policies to ensure that they are consistent with the overall provincial priority of protecting drinking water and its sources.

RECOMMENDATION #3: Ontario's drinking water statute should include provisions that:

(a) establish appropriate judicial and political accountability mechanisms, such as provincial monitoring/reporting and judicial review opportunities;

(b) specify that the statute binds the Crown;

(c) establish an new "Drinking Water Commission" that reports to the Minister of Environment, and that has the statutory mandate to develop and oversee the delivery of Ontario's drinking water program by (among other things) setting and enforcing provincial standards which implement the multi-barrier approach; and

(d) clearly delineate lines of authority, responsibility and communication requirements between Ministry staff, the Drinking Water Commission, municipal officials, public utilities, and medical officers of health.

RECOMMENDATION #4: Ontario's drinking water statute should apply to all public and private water treatment and distribution systems in the province. In addition, the statute should impose appropriate testing and sampling requirements in relation to private individual wells in order to detect and remedy unsafe drinking water.

RECOMMENDATION #5: Ontario's drinking water statute should entrench a substantive public right to clean and safe drinking water. The statute should further state that its purpose is to recognize, protect and enhance the public right to clean and safe drinking water.

RECOMMENDATION #6: Ontario's drinking water statute should include provisions that:

(a) impose a mandatory duty upon the Drinking Water Commission (or Minister) to set and maintain drinking water standards;

(b) impose a mandatory duty upon the Drinking Water Commission (or Minister) to periodically review the adequacy of existing standards, and to make such revisions to the standards as may be necessary to protect human health and safety;

(c) specify that the primary objective of drinking water standards is to protect public health and safety of all Ontarians, including those who may be particularly vulnerable to waterborne illness or disease;

(d) entrench the precautionary principle as a mandatory consideration when drinking water standards are being drafted, reviewed or revised;

(e) establish legally binding mechanisms for meaningful public participation in drafting, reviewing or revising drinking water standards; and

(f) impose a mandatory duty upon the Drinking Water Commission (or Minister) to identify and evaluate new and emerging contaminants for which no standards exist in Ontario.

RECOMMENDATION #7: Ontario's drinking water statute should contain provisions that:

(a) establish a self-contained process for the Drinking Water Commission to approve (or reject) applications for waterworks that supply drinking water, and to ensure full public participation in the approvals process;

(b) clarify and strengthen existing requirements regarding operator licencing and training; and

(c) retain existing requirements regarding the mandatory use of accredited laboratories for drinking water sampling and analysis.

RECOMMENDATION #8: Ontario's drinking water statute should include provisions that:

(a) entrench current testing, treatment, notification and corrective action requirements into law rather than regulation; and

(b) define "groundwater under the influence of surface water", and specify that surface water treatment requirements apply in such situations.

RECOMMENDATION #9: Ontario's drinking water statute should expressly require public and private water treatment and distribution system owners and operators to:

(a) avoid drinking water sources that will, or are likely to, result in hazards to public health and safety due to pollution from activities within the watershed or sub-watershed;

(b) assess and periodically review the vulnerability of their sources of drinking water to current or future contamination or degradation, and publicly report upon the results of such assessments;

(c) develop and implement appropriate source protection measures where necessary to safeguard public health and safety;

(d) involve the public in developing source assessment programs and source protection measures that will be implemented to safeguard public health and safety; and

RECOMMENDATION #10: Ontario's drinking water statute should amend existing laws (such as the *Planning Act*, *Municipal Act*, and/or *Conservation Authorities Act*) to ensure that municipal officials have sufficient legal tools to implement the measures specified in source protection programs.

RECOMMENDATION #11: Ontario's drinking water statute should fully entrench "community right to know" principles, and in particular, should include provisions that require:

(a) immediate public notice through appropriate means (e.g. news media, signs, internet, etc.) whenever:

(i) exceedances of prescribed standards or indicators of adverse water quality are detected including "presumptive" results;
(ii) treatment or testing equipment is inoperative or malfunctioning; or
(iii) required sampling and analysis is not being carried out;

(b) preparation of comprehensive consumer confidence reports which are to be mailed to all consumers on an annual basis, and which address the following matters:

(i) source assessment/protection;
(ii) discussion of any regulated contaminants or unregulated substances detected in the raw or treated water;
(iii) discussion of any violations of contaminant limits or prescribed standards, and related public health concerns, particularly for vulnerable persons; and
(iv) discussion of the steps taken to address such violations, and measures proposed to prevent any future violations; and

(c) require the Drinking Water Commission (or Minister) to establish and maintain an electronic drinking water registry that summarizes consumer confidence reports, discusses issues and trends arising from such reports, and otherwise serves as a public repository for significant drinking water information (e.g. approvals, prosecutions and orders, State of Drinking Water Reports, etc.).

RECOMMENDATION #12: Ontario's drinking water statute should contain provisions that require the Drinking Water Commission (or Minister) to:

(a) prepare and file annual "State of Ontario's Drinking Water Reports" in the Legislative Assembly; and

(b) establish and maintain provincial monitoring programs on drinking water matters, such as:

(i) quality and quantity of surface water and groundwater sources of drinking water;
(ii) sources of contamination of drinking water;

(iii) new or emerging pathogens and substances that may be present in drinking water and that may pose a threat to public health and safety in Ontario; and

(iv) compliance by water suppliers with parameter limits and other prescribed standards.

RECOMMENDATION #13: Ontario's drinking water statute should contain provisions that:

(a) impose a positive duty on the Drinking Water Commission (or Minister) to enforce the provisions of the statute on a "zero tolerance" basis;

(b) impose a positive duty on the Drinking Water Commission (or Minister) to develop (with full public input) a compliance manual to provide detailed direction regarding the investigation and enforcement of drinking water provisions under the statute;

(c) establish a broad range of mandatory abatement tools, including administrative penalties, stop orders and emergency orders;

(d) create a streamlined right for Ontarians to require (not just request) investigations of suspected contraventions of drinking water requirements;

(e) create a "citizens' suit" mechanism that allows Ontarians to enforce drinking water requirements in civil court; and

(f) create a new cause of action for persons who suffer loss, injury or damage as a result of a contravention of the statute or the regulations thereunder.

RECOMMENDATION #14: Ontario's drinking water statute should include:

(a) broad, "strict liability" offences that prohibit:

(i) owners/operators of public and private water treatment and distribution systems from providing users with drinking water that exceeds permitted contaminant levels or contravenes prescribed standards;

(ii) owners/operators of public and private water treatment and distribution systems from contravening the terms or conditions imposed under statutory approvals for such systems;

(iii) owners/operators of public and private water treatment and distribution systems from submitting false information or reports required by law;

(iv) owners/operators of public and private water treatment and distribution systems from failing to report threats to drinking water quality to the Minister and/or public health officials;

(v) any person from causing or permitting the release of contaminants into or near waterworks, drinking water sources, wells or well recharge areas, or attempting or threatening to do so;[344] or

(vi) any person from damaging, destroying, altering, or otherwise tampering with waterworks or wells, or attempting or threatening to do so; and

(b) severe penalties for contraventions, including:

(i) minimum fines for a first conviction;

(ii) maximum fines of not more than $6 million for a first conviction;

(iii) significant higher fines for subsequent offences, or for offences where the health of any person has been impaired as a result of the contravention;

(iv) jail terms for serious offences, such as where the health of any person has been impaired as a result of the contravention;

(v) stripping of any profits or monetary benefits acquired or gained by the defendant through the contravention;

(vi) orders of prohibition, restitution, or restoration, including orders to provide an alternate drinking water supply; and

(vii) such further orders or conditions that are necessary to prevent further offences or to contribute to the rehabilitation of the defendant.

RECOMMENDATION #15: Ontario's drinking water statute should establish a mandatory duty upon the Drinking Water Commission (or Minister) to:

(a) undertake and fund research programs such as:

(i) identification, treatment and prevention of adverse public health effects from drinking water contaminants;

(ii) quality and quantity of water available to public and private water suppliers in Ontario;

[344] For such an offence, it may be necessary to recognize a limited "statutory authority" defence for situations where, for example, a company is lawfully discharging contaminants into the environment in accordance with its certificate of approval.

(iii) current and future sources of drinking water contaminants, including unregulated substances;

(iv) controlling or avoiding the effects of intensive farming on sources of drinking water;

(v) identifying and protecting Ontarians who may be at special risk of waterborne disease;

(vi) watershed management and source protection measures; and

(vii) water conservation; and

(b) establish and fund programs that provide technical and financial assistance to owners/operators of public or private water treatment and distribution systems in order to:

(i) install, construct or upgrade equipment in the waterworks (or related infrastructure) in order to meet drinking water standards;

(ii) implement water conservation plans or programs;

(iii) undertake source assessment/protection programs; and

(iv) employee training;

RECOMMENDATION #16: Ontario's drinking water statute should require the establishment of a public advisory committee to research and report upon drinking water matters to the Drinking Water Commission (or Minister).

APPENDIX I: COMPARATIVE PARAMETER CHART

Parameter	Ontario mg/L MAC[345] (unless otherwise stated)	Canada mg/L MAC (unless otherwise stated)	United States mg/L MCL (unless otherwise stated)	European Union mg/L [346]	England mg/L [1]	World Health Organization
Microorganisms:						
E. coli or fecal coliform in any required sample other than a raw water sample	0 (if detected, corrective action is specified until 2 consecutive samples show 0)	0 / 100mL ("the confirmed presence of *E. coli* in drinking water should trigger an immediate "boil water" advisory)	0	0/100mL	0/100mL	0/100mL
Total coliforms (but not E.coli or other fecal coliforms)	0 (if detected, corrective action is specified until 2 consecutive samples show 0)	up to 10 (with descriptive criteria)[347]	maximum 5.0% samples total coliform-positive in a month (if <40 samples/month, maximum 1 sample/month total coliform-positive)		0/100mL (in 95% of samples from each service reservoir)	0/100mL (in the case of large supplies, must not be present in 95% of samples in any 12-month period)
Heterotrophic plate count	>500 colonies/mL	>500 colonies/mL	>500 colonies/mL			
Total coliform membrane filter analysis	>200 background colonies	>200 background colonies				
Aeromonas spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal streptococci (Group D)	0					
Cryptosporidium	see note[348]		as of 1-Jan-2002: TT with 99% removal/		Treatment required at high-risk facilities	

[345] Maximum Acceptable Concentration

[346] Parameters expressed in µg/L in the European Union Directive and the UK Water Quality Regulations have been converted to mg/L in order to facilitate comparison across jurisdictions

[347] "Drinking water that fulfills the following conditions is considered to be in compliance with the coliform MAC:

1. No sample should contain more than 10 total coliform organisms per 100 mL, none of which should be faecal coliforms;
2. No consecutive sample from the same site should show the presence of coliform organisms; and
3. For community drinking water distribution systems:
   a) not more than one sample from a set of samples taken from the community on a given day should show the presence of coliform organisms; and
   b) not more than 10% of the samples based on a minimum of 10 samples should show the presence of coliform organisms"

Parameter	Ontario mg/L MAC[345] (unless otherwise stated)	Canada mg/L MAC (unless otherwise stated)	United States mg/L MCL (unless otherwise stated)	European Union mg/L [346]	England mg/L [1]	World Health Organization
			inactivation			
Giardia lamblia	as above		TT with 99.9% removal/ inactivation			
Legionella			TT with no set limit, but controlled via limits on *Giardia* and viruses			
Viruses (enteric)			TT with 99.99% removal / inactivation			
Other:						
Alachlor	0.005 (IMAC[349])	0.005 (IMAC)	0.002			0.02
Aldicarb	0.009	0.009	0.003			0.01
Aldrin + Dieldrin	0.0007	0.0007				0.00003
Arsenic	0.025 (IMAC)	0.025 (IMAC)	0.05	0.01	0.01	0.01 (P)[350]
Atrazine + N-dealkylated metabolites	0.005 (IMAC)	0.005 (IMAC)	0.003			0.002
Azinphos-methyl	0.02	0.02				
Barium	1.0	1.0	2.0			0.7
Bendiocarb	0.04	0.04				
Benzene	0.005	0.005	0.005	0.001	0.001	0.01
Benzo(a)pyrene (PAHs)	0.00001	0.00001	0.0002	0.00001	0.00001	0.0007
Boron	5.0 (IMAC)	5.0 (IMAC)		1.0	1.0	0.5 (P)
Bromoxynil	0.005 (IMAC)	0.005 (IMAC)				
Cadmium	0.005	0.005	0.005	0.005	0.005	0.003
Carbaryl	0.09	0.09				
Carbofuran	0.09	0.09	0.04			0.07
Carbon tetrachloride	0.005	0.005	0.005			0.002
Chloramines	3.0	3.0	4.0 (MRDL)[351]			

[348] Ontario has introduced certain treatment provision regarding *Cryptosporidium* and *Giardia* in Ontario Drinking Water Standards, January 2001
[349] Interim Maximum Acceptable Concentration
[350] P="provisional guideline value" - used where health effects information is limited, where there is greater uncertainty over effects, where recommended health-based guideline is below the level that can be achieved through practical treatment methods, or where disinfection is likely to result in the guideline being exceeded

Parameter	Ontario mg/L MAC[345] (unless otherwise stated)	Canada mg/L MAC (unless otherwise stated)	United States mg/L MCL (unless otherwise stated)	European Union mg/L [346]	England mg/L [1]	World Health Organization
Chlordane (total)	0.007	-	0.002			0.0002
Chlorpyrifos	0.09	0.09				
Chromium	0.05	0.05	0.1	0.05	0.05	0.05
Cyanazine	0.01 (IMAC)	0.01 (IMAC)				0.0006
Cyanide	0.2	0.2	0.2	0.05	0.05	0.07
Diazinon	0.02	0.02				
Dicamba	0.12	0.12				
1,2-Dichlorobenzene / o-Dichlorobenzene	0.2	0.2	0.6			1
1,4-Dichlorobenzene / p-Dichlorobenzene	0.005	0.005	0.075			0.3
DDT + metabolites	0.03	-				0.002
1,2-Dichloroethane	0.005 (IMAC)	0.005 (IMAC)	0.005	0.003	0.003	0.03
1,1-Dichloroethylene (vinylidene chloride)	0.014	0.014	0.007			
Dichloromethane	0.05	0.05	0.005			0.02
2,4-Dichlorophenol	0.9	0.9				
2,4-Dichlorophenoxy-acetic acid (2,4-D)	0.1 (IMAC)	0.1 (IMAC)	0.07			0.03
Diclofop-methyl	0.009	0.009				
Dimethoate	0.02 (IMAC)	0.02 (IMAC)				
Dinoseb	0.01	0.01	0.007			
Dioxin and furan	0.000000015		Dioxin (2,3,7,8-TCDD): 0.00000003			
Diquat	0.07	0.07	0.02			0.01 (P)
Diuron	0.15	0.15				
Fluoride	1.5	1.5	4.0	1.5	1.5	1.5
Glyphosate	0.28 (IMAC)	0.28 (IMAC)	0.7			U[352]
Heptachlor + Heptachlor Epoxide	0.003	-	heptachlor: 0.0004 heptachlor expoxide:			0.00003

[351] MRDL = Maximum Residual Disinfectant Level

[352] "It is unnecessary to recommend a health-based guideline value for these compounds because they are not hazardous to human health at concentrations normally found in drinking-water" (www.who.int/water_sanitation_health/GDWQ/Summary_tables/Tab3.htm)

Parameter	Ontario mg/L MAC[345] (unless otherwise stated)	Canada mg/L MAC (unless otherwise stated)	United States mg/L MCL (unless otherwise stated)	European Union mg/L [346]	England mg/L [1]	World Health Organization
			0.0002			
Lead	0.01	0.01	TT[353] 0.015 (action level)	0.01	.025 (2003-2013) .01 (2013-)	0.01
Lindane (total)	0.004		0.0002			0.002
Malathion	0.19	0.19				
Mercury	0.001	0.001	0.002	0.001	0.001	0.001
Methoxychlor	0.9	0.9	0.04			0.02
Metolachlor	0.05	0.05				0.01
Metribuzin	0.08	0.08				
Monochlorobenzene	0.08	0.08	0.1			0.3
Nitrate	10.0 (as nitrogen)	45.0 (equivalent to 10.0 mg/L as nitrate-nitrogen)	10.0 (as nitrogen)	50.0 (as nitrogen)	50.0(as nitrogen)	50.0 (as nitrogen)
Nitrite	1.0 (as nitrogen)	-	1.0 (as nitrogen)			3 (acute) 0.2 (P) chronic (as nitrogen)
Nitrate + nitrite (as nitrogen)	10.0	-	10.0 (as nitrogen)			
Nitrilotriacetic acid (NTA)	0.4	0.4				0.2
Nitrosodimethylamine (NDMA)	0.000009 (IMAC)	-				
Paraquat	0.01 (IMAC)	0.01 (IMAC)				
Parathion	0.05	0.05				
Pentachlorophenol	0.06	0.06	0.001			0.009 (P)
Phorate	0.002 (IMAC)	0.002 (IMAC)				
Picloram	0.19 (IMAC)	0.19 (IMAC)	0.5			
PCBs	0.003 (IMAC)	-	0.0005			
Prometryne	0.001 (IMAC)	-				
Selenium	0.01	0.01	0.05	0.01	0.01	0.01
Simazine	0.01 (IMAC)	0.01 (IMAC)	0.004			0.002
Temephos	0.28 (IMAC)					
Terbufos	0.001 (IMAC)	0.001 (IMAC)				
Tetrachloroethylene	0.030	0.030	0.005			

[353] TT = regulation by treatment technology

Parameter	Ontario mg/L MAC[345] (unless otherwise stated)	Canada mg/L MAC (unless otherwise stated)	United States mg/L MCL (unless otherwise stated)	European Union mg/L [346]	England mg/L [1]	World Health Organization
(perchloroethylene)						
2,4,6-Trichlorophenol	0.005	0.005				0.2
2,4,5-T (Silvex)	0.28	-	0.05			0.009
Trifluralin	0.045 (IMAC)	0.045 (IMAC)				0.02
Trihalomethanes	0.10	0.10	0.10 0.08 (as of 1 January 2002)	0.10	0.10	the sum of the ration of the concentration of each to its respective guideline value should not exceed 1
Turbidity	1.0 NTU[354]		1.0 NTU in 95% of cases; 5.0 NTU in all cases 0.3 NTU in 95% of cases; 1.0 NTU in all cases (as of 1 January 2002)		4 NTU	5 NTU
Uranium	0.10	0.02 (IMAC)	0.03			0.002 (P)
Vinyl Chloride	0.002	0.002	0.002	0.0005	0.0005	0.005
II. Parameters not listed in the Ontario regulation, but in Canadian guidelines (and others):						
Aluminum		0.1[355]			0.2	0.2
Antimony		0.006 (IMAC)	0.006	0.005	0.005	0.005
Bromate		0.01 (IMAC)	0.010	0.010	0.010	0.025 (P)
Chloride		≤ 250 (AO)[356]			250 (guideline only)	250
Colour		≤15 TCU[357] (AO)			20 mg/L pt/co	15 TCU
Copper		≤1.0 (AO)	TT action level = 1.3		2.0	2.0
Ethylbenzene		≤0.0024 (AO)	0.7			0.3

[354] NTU = nephelometric turbidity unit
[355] No health-based guideline for aluminum in drinking water has been established, but water treatment plants using aluminum in treatment processes should reduce residual aluminum to the lowest extent possible
[356] AO = aesthetic objective
[357] TCU = true colour unit

Parameter	Ontario mg/L MAC[345] (unless otherwise stated)	Canada mg/L MAC (unless otherwise stated)	United States mg/L MCL (unless otherwise stated)	European Union mg/L [346]	England mg/L [1]	World Health Organization
Iron		≤0.3 (AO)			200	0.3
Manganese		≤0.05 (AO)			50	0.5 (P)
Odour		Inoffensive (AO)			3 at 25˚ (dilution number)	should be acceptable
pH		6.5 to 8.5 (AO)			6.5-10.0	preferably <8 for effective disinfection with chlorine
Sodium		≤200 (AO)			200	200
Sulphate		≤500 (AO)			250 (guideline only)	250
Sulphide (as H_2S)		≤0.05 (AO)				
Taste		Inoffensive (AO)			3 at 25˚ (dilution number)	should be acceptable
Temperature		≤15˚C (AO)				
Toluene		≤0.024 (AO)	1.0			0.7
Total Dissolved Solids (TDS)		≤500 (AO)				1000
Xylenes (total)		≤0.3 (AO)	10.0			0.5
Zinc		≤5 (AO)				3
III. Parameters not listed for Ontario / Canada:						
Chlorine			4.0 (MRDL)			5
Chlorine dioxide			0.8 (MRDL)			
Chlorite			1.0			0.2 (P)
Haloacetic acids (HAA5)			0.060			
Acrylamide			TT	0.0001	0.0001	0.0005
Asbestos (fiber > 10 micrometers)			7 million fibres/L			U
Beryllium			0.004			No adequate data
Thallium			0.002			
Chlorobenzene			0.1			
Dalapon			0.2			
1,2-Dibromo-3-chloropropane (DBCP)			0.0002			0.001

Parameter	Ontario mg/L MAC[345] (unless otherwise stated)	Canada mg/L MAC (unless otherwise stated)	United States mg/L MCL (unless otherwise stated)	European Union mg/L [346]	England mg/L [1]	World Health Organization
cis-1,2-Dichloroethylene			0.07			
trans-1,2-Dichloroethylene			0.1			
Dichloropropane			0.005			
Di(2-ethylhexyl) adipate			0.4			0.08
Di(2-ethylhexyl) phthalate			0.006			0.008
Endothall			0.1			
Endrin			0.002			
Epichlorohydrin			TT	0.0001	0.0001	0.0004 (P)
Ethylene dibromide			0.00005			
Hexachlorobenzene			0.001			0.001
Hexachlorocyclopent-adiene			0.05			
Oxamyl (Vydate)			0.2			
Styrene			0.1			0.02
Toxaphene			0.003			
1,2,4-Trichlorobenzene			0.07			trichlorobenzenes (total): 0.02
1,1,1-Trichloroethane			0.2			2.0 (P)
1,1,2-Trichloroethane			0.005			
Trichloroethylene			0.005			
IV. Parameters in EU / UK Guidelines not listed (or listed in an alternative manner) in Canada/Ontario/US:						
Nickel				0.02	0.02	0.02 (P)
Pesticides[358]				0.0001	0.0001	
Pesticides including aldrin, dieldrin, heptachlor and heptachlor epoxide					0.00003	
Pesticides - total				0.0005	0.0005	
PAHs[359]				0.0001	0.0001	
Tetrachloroethene and				0.01	0.01	trichloroethene: 0.07

[358] Ontario, Canada, and the United States regulate individual pesticides instead; while the UK has a combined approach with specific limits on a few pesticides as well as the overall limit required by the European Directive

[359] Benzo(a)pyrene, one of the PAHs, is regulated individually in ON/Can/US. The UK regulations cover 4 PAHs: benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, and indeno(1,2,3-cd)pyrene

Parameter	Ontario mg/L MAC[345] (unless otherwise stated)	Canada mg/L MAC (unless otherwise stated)	United States mg/L MCL (unless otherwise stated)	European Union mg/L [346]	England mg/L [1]	World Health Organization
trichloroethene						(P) tetrachloroethene: 0.04
Tetrachloromethane					3	

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