

IN THE WAKE OF THE WALKERTON TRAGEDY: THE TOP 10 QUESTIONS

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By

Richard D. Lindgren¹

Since Dr. John Snow's 1854 discovery in London, England, that drinking water could kill people by transmitting disease, the developed world has come a long way toward eliminating the transmission of water-borne disease. The Walkerton experience warns that we may have become victims of our own success, taking for granted our drinking water's safety. The keynote in the future should be vigilance. We should never be complacent about drinking water safety.

-- The Hon. Mr. Justice O'Connor, *Part Two Report of the Walkerton Inquiry*, page 8

PART I – INTRODUCTION

In May 2000, the municipal drinking water system in Walkerton, Ontario (population 4,800) became contaminated with deadly bacteria, notably *Escherichia coli* O157:H7 and *Campylobacter jejuni*. As a result of the contamination, seven people died, and 2,300 people became ill. At the present time, some Walkerton residents (including children) continue to suffer adverse health effects, and an extensive community health study has been launched to identify and assess the long-term effects of the drinking water contamination.

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Unfortunately, the Walkerton Tragedy was not the first or only instance of waterborne disease in Ontario² or elsewhere in Canada³ in recent decades. Nevertheless, the alarming loss of life and the staggering socio-economic cost of the Walkerton Tragedy has clearly heightened public awareness, rekindled national debate, and refocused regulatory attention on the importance of ensuring safe drinking water.

In the wake of the Walkerton Tragedy, the Ontario Government established a special Commission under the *Public Inquiries Act* to investigate the cause of the contamination, and to make recommendations to protect drinking water across the province. The Honourable Mr. Justice O'Connor of the Ontario Court of Appeal was appointed as the Commissioner, and he was given a broad mandate as follows:

The commission shall inquire into the following matters:

- (a) the circumstances which caused hundreds of people in the Walkerton area to become ill, and several of them to die in May and June 2000, at or around the same time as *Escherichia coli* bacteria were found to be present in the town's water supply;
- (b) the cause of these events, including the effect, if any, of government policies, procedures, and practices; and
- (c) any other relevant matters that the commission considers necessary to ensure the safety of Ontario's drinking water,

in order to make such findings and recommendations as the commission considers advisable to ensure the safety of the water supply system in Ontario.⁴

² For example, the Environmental Commissioner of Ontario has noted that approximately 40 surface water treatment plants in the province are vulnerable to *cryptosporidium*, and that *cryptosporidium* outbreaks have been confirmed in Collingwood and other Ontario communities: see *Annual Report 1994-95: Opening the Doors to Better Environmental Decision-Making* (June 1996), page 49.

³ In 2001, for example, 5,800 to 7,100 local residents of North Battleford, Saskatchewan suffered from gastrointestinal illness caused by the parasite *cryptosporidium parvum*, which entered the city's surface water treatment plant from the North Saskatchewan River: see *Report of the Commission of Inquiry* (March 2002), page 4. Similarly, dozens of waterborne disease outbreaks have been documented in British Columbia since 1980: see *Final Report: Panel Review of British Columbia's Drinking Water Protection Act* (February 2002), page 2.

To fully address this mandate, the Walkerton Inquiry was organized into two main phases. The first phase, known as Part 1 of the Inquiry, focused primarily on the events in Walkerton and their cause(s). Public hearings under Part 1 of the Inquiry were held in Walkerton over a nine month period, and various individuals and groups were granted full-time or part-time standing to participate in the proceedings.⁵ During Part 1, the Commission heard evidence from 114 witnesses, including local residents, municipal officials, provincial employees, technical, medical and scientific experts, two former Ministers of the Environment, and the Premier of Ontario. To assist in its fact-finding function, the Commission also executed a number of search warrants to secure and review hundreds of thousands of relevant documents held by provincial ministries and agencies. The specific findings and 28 recommendations of Part 1 of the Inquiry were released in early 2002 in *Part One Report of the Walkerton Inquiry: The Events of May 2000 and Related Issues* (“the Part 1 Report”).⁶

The second phase, known as Part 2 of the Inquiry, involved a broad examination of legal and policy issues related to drinking water safety across Ontario. Unlike Part 1 of the Inquiry, the Part 2 proceedings did not involve formal evidentiary hearings. Instead, Part 2 was structured into three distinct phases: first, “Commission Papers” were prepared by recognized experts on a wide range of drinking water matters (e.g. source protection, governance models, etc.); second, written submissions were received from

⁴ Order-in-Council 1170/2000 (June 13, 2000).

⁵ Full-time parties included the Province of Ontario, Chief Coroner of Ontario, Concerned Walkerton Citizens, Walkerton Public Utilities Commission, and various municipal and public health officials and entities.

⁶ Copies of the Part 1 and Part 2 Reports may be ordered at: www.publications.gov.on.ca.

parties with standing for Part 2 of the Inquiry⁷; and third, numerous expert workshops and "town hall" meetings were held at locations across Ontario to permit members of the public to make submissions directly to the Commission. The specific findings and 93 recommendations of Part 2 of the Inquiry were released in May 2002 in *Part Two Report of the Walkerton Inquiry: A Strategy for Safe Drinking Water* ("the Part 2 Report").⁸

Read together, the Part 1 and Part 2 Reports of the Walkerton Inquiry clearly establish a comprehensive agenda for legislative and regulatory reform to ensure drinking water safety in Ontario. In fact, representatives of the Ontario Government have committed that the province will adopt and implement all recommendations in the Walkerton Reports. Because of the thorough and wide-ranging nature of the Walkerton Inquiry, it seems likely that these Reports -- and Ontario's implementation of the Walkerton recommendations -- will be carefully observed and considered by environmental and public health officials in other jurisdictions across Canada.

Accordingly, the purpose of this paper is to discuss the main legal, technical and fiscal questions which arise from the Part 1 and Part 2 Reports of the Walkerton Inquiry.

These questions may be framed as follows:

1. What caused the Walkerton Tragedy?
2. What is the best approach for protecting drinking water?
3. How should sources of drinking water be protected?
4. How should drinking water quality standards be established?

⁷ Both CELA and the Concerned Walkerton Citizens were granted standing for Part 2 of the Inquiry.

5. What operational standards should apply to drinking water systems?
6. What is the provincial role in drinking water safety?
7. How should small drinking water systems be regulated?
8. How should drinking water safety be ensured within First Nation communities?
9. How should manure management activities be regulated?
10. Who should operate drinking water systems?

PART II – THE TOP 10 QUESTIONS

1. What caused the Walkerton Tragedy?

With respect to the physical cause(s) of the Walkerton Tragedy, Mr. Justice O'Connor made the following findings:

- the contaminants, largely *E. coli* O157:H7 and *Campylobacter jejuni*, entered the Walkerton system through Well 5 on or shortly after May 12, 2000;
 - the primary, if not the only, source of the contamination was manure that had been spread on a farm near Well 5, although other sources cannot be excluded;
 - the manure was applied in late April 2000, before a period of significant rainfall occurring from May 8 to 12. The owner of this farm followed accepted farm practices and should not be faulted;
 - Well 5 was a shallow well, whose casing extended only 5 m below the surface. All of the groundwater for Well 5 was drawn from an area of highly fractured bedrock, which made it possible for surface bacteria to quickly enter into fractured rock channels and proceed directly to Well 5. In short, Well 5 was supplied by a groundwater source under the direct influence of surface water;
 - the overburden in the area of Well 5 was shallow, and there were likely direct pathways – such as fence post holes and a reversing spring by the north side of Well 5 – through which the contamination travelled from the surface to the bedrock and the aquifer;
-

- raw water contamination by coliforms and fecal coliforms was indicated by the initial pump tests of Well 5 in 1978 and continued to May 2000;
- in May 2000, the operators of the Walkerton water system chlorinated the water at Well 5, but routinely used less chlorine than was required. The incoming contamination on or about May 12th overwhelmed the chlorine being added at Well 5; and
- the outbreak was preventable if continuous chlorine residual or turbidity monitors had been installed at Well 5. Such monitors could have sounded an alarm and shut off the pump when the chlorine residual dropped.⁹

Having identified the physical cause(s) of the Walkerton Tragedy, Mr. Justice O'Connor then described numerous operational errors and omissions by the directors, managers and staff of the Walkerton Public Utilities Commission ("PUC"), which ran the municipal drinking water system:

- the outbreak would have been prevented by the use of continuous chlorine residual and turbidity monitors at Well 5;
- the Walkerton PUC operators lacked the training and expertise necessary either to identify the vulnerability of Well 5 to surface contamination or to understand the corresponding need for continuous chlorine residual and turbidity monitors;
- the scope of the outbreak would have very likely have been substantially reduced if the Walkerton PUC operators had measured chlorine residuals at Well 5 daily, as they should have, during the critical period when contamination was entering the system;
- for years, the PUC operators engaged in a host of improper operating practices, including failing to use adequate doses of chlorine, failing to monitor chlorine residuals daily, making false entries about residuals in daily operating records, and misstating the locations where microbiological samples were taken. The operators knew that these practices were unacceptable and contrary to MOE guidelines and directives;
- the PUC commissioners were not aware of the improper treatment and monitoring practices of the PUC operators. However, those who were commissioners in 1998 failed to properly respond to an MOE inspection report that set out significant concerns about water quality and that identified several operating deficiencies at the PUC;

⁹ Part 1 Report, pages 3-5, 15, 105-07.

- the PUC's general manager concealed from local health officials and others the adverse test results from water samples taken on May 15, and the fact that Well 7 had operated without a chlorinator during that week and earlier that month. Had he disclosed either of these facts, the health unit would have issued a boil water advisory on May 19, and 300 to 400 illnesses would have been avoided.¹⁰

Furthermore, Mr. Justice O'Connor identified serious deficiencies in the Ontario government's drinking water program -- and consequences of provincial budgetary decisions -- that contributed, at least in part, to the Walkerton Tragedy:

- the failure to use continuous monitors at Well 5 resulted from shortcomings in the approvals and inspections programs of the Ministry of the Environment ("MOE");
- the MOE's inspection program should have detected the Walkerton PUC's improper treatment and monitoring practices and ensured that those practices were corrected. After the 1998 inspection, the MOE should have issued a Director's Order to compel the Walkerton PUC to comply with MOE water treatment and monitoring requirements;
- the provincial government's budget reductions led to the discontinuation of government laboratory testing services for municipalities in 1996. In implementing this decision, the government should have enacted a regulation mandating that testing laboratories immediately and directly notify both the MOE and the Medical Officer of Health about adverse results. Had the government done this, the boil water advisory would have been issued by May 19 at the latest, thereby preventing hundreds of illnesses; and
- the provincial government's budget reductions made it less likely that the MOE would have identified both the need for continuous monitors at Well 5 and the improper operating practices of the Walkerton PUC.¹¹

In reaching these conclusions about the provincial role in the Walkerton Tragedy, Mr. Justice O'Connor flatly rejected the Ontario government's argument that the PUC manager was solely responsible for the outbreak:

The MOE was and continues to be the provincial government ministry with the primary responsibility for regulating – and for enforcing legislation, regulations

¹⁰ Part 1 Report, pages 3-5.

¹¹ Part 1 Report, pages 3-5, 270.

and policies that apply to – the construction and operation of communal water systems.

...[G]iven that the MOE was responsible for overseeing the construction and operation of the Walkerton water facility, its activities must also be considered in order to determine if it adequately fulfilled its role and, if not, whether a proper exercise of its responsibility would have prevented the outbreak, reduced its scope, or reduced the risk that the outbreak would occur.

At the Inquiry, the government argued that I should find that Stan Koebel was the sole cause of the tragedy in Walkerton, and that I should find that government failures, if any, played no role – the suggestion being that if it were not for Stan Koebel’s failures, the tragedy would not have occurred. I reject that argument completely. It totally misconceives the role of the MOE as overseer of communal water systems, a role that is intended to include ensuring that water operators and facilities operate satisfactorily...

The government’s argument also ignores the fact that the only thing that could have completely prevented the outbreak in Walkerton was the use of continuous chlorine residual and turbidity monitors at Well 5. The failure to use continuous monitors at Well 5 resulted from shortcomings of the MOE in fulfilling its regulatory and oversight role, not from failures of Walkerton PUC operators.¹²

To address the above-noted failings at both the local and provincial levels, Mr. Justice O’Connor went on to make numerous recommendations in the Part 1 and Part 2 Reports in order to ensure drinking water safety across Ontario, as described below.

2. What is the best approach for protecting drinking water?

In the Part 1 Report, Mr. Justice O’Connor firmly endorsed the “multi-barrier” approach to ensuring drinking water safety:

Experts at the Inquiry repeatedly stated that a multi-barrier approach is necessary to ensure safe drinking water...

In summary, the multi-barrier approach includes five elements designed to ensure safe drinking water in communal systems: a good source of water; effective treatment of the water; a secure distribution system; continuous monitoring of the system; and an appropriate response to adverse results.¹³

¹² Part 1 Report, pages 268-69.

¹³ Part 1 Report, pages 108, 111-12.

The rationale for adopting the multi-barrier approach was described by Mr. Justice O'Connor in the Part 2 Report as follows:

The risks of unsafe drinking water can be reduced to a negligible level by simultaneously introducing a number of measures [such as] placing multiple barriers aimed at preventing contaminants from reaching consumers...

The multiple-barrier approach is well-entrenched in the water industry, for good reasons. Putting in place a series of measures, each independently acting as a barrier to passing waterborne contaminants through the system to consumers, achieves a greater overall level of protection than does relying exclusively on a single barrier (e.g. treatment alone or source protection alone). A failure in any given barrier will not cause a failure of the entire system. The challenge is to ensure that each of the barriers is functioning properly, so that they constitute the highest level of protection that is reasonably and practically available.¹⁴

Significantly, the concept of “multi-barrier” protection of drinking water safety has also been endorsed by British Columbia’s Drinking Water Review Panel, which examined the adequacy of province’s drinking water legislation in the wake of the Walkerton Tragedy. In particular, the Drinking Water Review Panel described the multi-barrier approach as follows:

- there must be management and protection of the water source through effective controls over land uses and pollution sources to prevent contamination;
- there must be appropriate water treatment;
- there must be sound, well-maintained and safe distribution systems, so that water does not become contaminated in its delivery;
- there must be effective monitoring of water quality, followed by response to adverse results, and enforcement of standards.¹⁵

¹⁴ Part 2 Report, pages 5-6.

¹⁵ *Final Report: Panel Review of British Columbia’s Drinking Water Protection Act* (February 2002), page 13.

Similarly, the Commission of Inquiry regarding the North Battleford *cryptosporidium* outbreak endorsed the multi-barrier approach in the context of drinking water drawn from surface water sources:

What the experts and the industry recommend with respect to the treatment of surface water is a multi-barrier approach. The first barrier is watershed protection to ensure the best possible raw water source. The second barrier is optimization of the plant processes designed to achieve settlement of particulates and sediment in the raw water. The third barrier is the maximization of the efficiency and monitoring of the filtration process which follows sedimentation. The final barrier is to ensure that the water is adequately disinfected. None of the foregoing barriers were maximized at the North Battleford surface water treatment plant in the years leading up to the outbreak.¹⁶

Clearly, there appears to be widespread consensus across Canada that the multi-barrier approach is necessary and desirable for protecting drinking water safety. However, the challenge for drinking water regulators, suppliers, and consumers is to ensure that the multi-barrier approach is implemented in an effective, efficient and enforceable manner.

To date, the Ontario government has attempted to implement the multi-barrier approach through various legislative and regulatory initiatives that have been recently passed or proposed. As discussed below, these initiatives include: development of a comprehensive, watershed-based framework for protecting sources of drinking water; enactment of the *Safe Drinking Water Act, 2002* (“SDWA”)¹⁷ to deal with treatment and distribution matters; and passage of regulatory requirements regarding monitoring,

¹⁶ *Report of the Commission of Inquiry* (March 2002), page 5.

¹⁷ S.O. 2002, c.32. The SDWA (also known as Bill 195) received Third Reading and Royal Assent in December 2002, but has not yet been proclaimed in force.

reporting, and corrective action when adverse test results are obtained.¹⁸ Because such initiatives are either relatively new or not even in force yet, it is too early to determine if Ontario's attempts to implement the multi-barrier approach will be successful, or if the initiatives are fully responsive to the recommendations in the Part 1 and 2 Reports of the Walkerton Inquiry. Thus, it remains to be seen whether Ontario's emerging multi-barrier regime will, in fact, be properly funded, sufficiently protective of public health, and rigorously enforced in order to prevent a recurrence of the Walkerton Tragedy.

3. How should sources of drinking water be protected?

The first – and arguably most important – barrier in the multi-barrier approach is to identify and protect secure sources of drinking water:

In a multi-barrier system for providing safe drinking water, the first barrier involves selecting and protecting reliable, high-quality drinking water sources.

A strong source protection program offers a wide variety of benefits. It lowers risk cost-effectively: keeping contaminants out of drinking water sources is an effective way of keeping them out of drinking water. This is particularly so because standard treatments cannot effectively remove certain contaminants. And protecting drinking water sources can in some instances be less expensive than treated contaminated water so that it meets required safety standards.¹⁹

In the Part 2 report, Mr. Justice O'Connor noted that source protection is an integral part of drinking water protection, and that source protection enjoys widespread public support:

The public strongly favours source protection as a key component of our water system. No other aspect of the task of ensuring drinking water safety received as much attention during the town hall meetings that this Inquiry held across

¹⁸ See, for example, the Drinking Water Protection Regulation (O.Reg. 459/00), which was made under the *Ontario Water Resources Act* in the immediate aftermath of the Walkerton Tragedy. The MOE has recently proposed an amended version of this regulation under the SDWA.

¹⁹ Part 2 Report, page 8.

Ontario. Source protection was also one of the main issues identified by the parties with standing in the Inquiry.²⁰

Similarly, during the course of its deliberations, the B.C. Drinking Water Review Panel received numerous public submissions indicating that source protection should be enhanced under the province's *Drinking Water Protection Act*, particularly in relation to non-point sources of drinking water contaminants (e.g. forestry activities, agriculture, septic system leakage, stormwater runoff, etc.). Accordingly, the Panel concluded that source protection measures should be strengthened under the legislation:

The Panel believes that drinking water must be afforded the highest priority in order to successfully protect drinking water sources from human impacts. Stronger safeguards are required to hold resource users responsible for impacts of their activities on source water quality. This includes a responsibility of the polluter to repair and mitigate damage, stop the harmful activity, or pay for additional water treatment costs.

Non-point sources of contaminants present a particular challenge because none of the conventional legal tools can adequately deal with this new and emerging problem. Both the scientific community and the regulatory agencies have been slow in recognizing the problem of diffuse, non-point sources of pollution in watersheds or drinking water supply areas... [T]he non-point source problem is now a dominant issue facing most water supply agencies.²¹

Among other things, the Panel recommended legislative changes that would improve local government's authority in relation to drinking watersheds and groundwater supply areas, and that would require decision-makers under other statutes to comply with the *Drinking Water Protection Act* when issuing approvals for activities within "critical or high risk" watersheds.²²

²⁰ *Ibid.*, pages 8-9.

²¹ *Final Report: Panel Review of British Columbia's Drinking Water Protection Act* (February 2002), pages 12-13.

The B.C. Panel's proposed reforms are strikingly similar to key source protection recommendations contained within the Part 2 Report of the Walkerton Inquiry. In fact, Mr. Justice O'Connor made approximately two dozen recommendations relating to source protection, including the very first recommendation of the Part 2 Report:

Drinking water sources should be protected by developing watershed-based source protection plans. Source protection plans should be required for all watersheds in Ontario.²³

The essential elements of the source protection regime proposed for Ontario were summarized by Mr. Justice O'Connor as follows:

Leadership from the MOE: I recommend that the MOE be the lead provincial agency with regard to all aspects of providing safe drinking water, including source protection. The MOE would establish the framework for developing the watershed-based source water protection plans, would help to fund and participate in their development, and would approve the completed plans.

A local planning process: To ensure that local considerations are fully taken into account, and to develop goodwill within and acceptance by local communities, source protection planning should be done as much as possible at a local (watershed) level, by those who will be most directly affected (municipalities and other affected local groups). Where possible, conservation authorities should coordinate the plans' local development. Otherwise, the MOE itself should undertake the coordination role. I envision the process as being completely open to public scrutiny.

Approval by the MOE: Once draft plans are developed at the watershed level, I envision that they would then be subject to MOE approval. Requiring approval will provide consistency of approach across watersheds and should help prevent undue influence by local interests.

Effective plans: If source protection plans are to be meaningful, they must be respected by the various actors in a watershed. Once the MOE has approved a plan, therefore, provincial Permits to Take Water and Certificates of Approval for sewage treatment plants and any other activities that pose a threat to water quality will have to be consistent with the approved plan. In cases involving a significant

²² *Ibid.*, pages 13-14.

²³ Part 2 Report, page 18. Mr. Justice O'Connor envisioned that the source protection recommendations would be implemented via amendments to Ontario's *Environmental Protection Act*: see Part 2 Report, page 28, Recommendation 68.

direct threat to drinking water sources, municipal official plans and zoning decisions will also need to be consistent with the local source protection plans. In all other situations, municipal official plans and zoning decisions should at least take the relevant source protection plans into account.²⁴

To supplement these general source protection recommendations, the Part 2 Report sets out a number of specific recommendations related to various sources of contamination, including sewage treatment plants, septage and biosolids, septic tanks, agriculture, and industrial activity. As noted by Mr. Justice O'Connor, "the thrust of all of these recommendations is that no discharges into drinking water sources should be permitted unless they are consistent with watershed-based source protection plans".²⁵ Moreover, Mr. Justice O'Connor envisioned that the overall source protection framework would be developed by the MOE within 6 to 8 months of the release of Part 2 Report in May 2002²⁶.

Subsequent to the release of the Part 2 Report, representatives of the Ontario government indicated that the above-noted source protection recommendations would be implemented by the province.²⁷ Indeed, during parliamentary debate on the SDWA, Ontario's Environment Minister stated that legislative amendments respecting source protection would be in place by the spring of 2003.²⁸

²⁴ Part 2 Report, pages 9-10.

²⁵ *Ibid.*, page 10.

²⁶ *Ibid.*, page 104.

²⁷ See, for example, the comments of Environment Minister Chris Stockwell, Second Reading Debate on Bill 195 (*Hansard*, October 31, 2002).

²⁸ It should be noted that Ontario's SDWA was passed in December 2002 without source protection measures. Therefore, source protection will have to be addressed either through amendments to existing legislation, or through passage of a stand-alone source protection statute.

However, it is unclear whether this legislative timetable will actually be met by the Ontario Government. For example, a multi-stakeholder advisory committee²⁹ on source protection was not established until November 2002,³⁰ and its pending report to the Ontario government on the general framework for source protection has not yet been released. Given that this report may itself be subject to further public comment and parliamentary debate, and given that it will take time to translate the general framework into specific legislative language, it seems that meaningful source protection may not be in place in Ontario for a considerable period of time. This is particularly true since it will take months (if not years) for source protection plans to be drafted by conservation authorities, approved by the MOE, and implemented via statutory authorizations (e.g. certificates of approval, permits to take water, municipal planning and zoning instruments, etc.).

In the meantime, a private member's bill has been introduced in the Ontario Legislature by MPP Marilyn Churley (NDP environment critic) to establish source protection legislation.³¹ While this bill is unlikely to be passed, it will undoubtedly serve as a benchmark for assessing the content and scope of the source protection regime that will be introduced by the Ontario government in due course.

4. How should drinking water quality standards be established?

Traditionally, drinking water quality across Canada has been addressed via “acceptable” contaminant levels derived from *Guidelines for Canadian Drinking Water*

²⁹ CELA is a member of this source protection advisory committee.

³⁰ News Release, “Eves Government Establishes Advisory Committee to Guide Framework for Protecting Drinking Water At Source” (November 15, 2002).

Quality prepared by the Federal-Provincial Subcommittee on Drinking Water. In general, these *Guidelines* establish maximum acceptable concentrations (“MAC”) for numerous substances as well as physical properties of drinking water. For some substances, where toxicological or epidemiological data is insufficient but a health hazard is suspected, an “interim” maximum acceptable concentration (“IMAC”) may be established pending further review.

Provinces have generally adopted or expressed the federal MAC and IMAC through guidelines, objectives or standards. In Ontario, for example, drinking water quality was historically addressed through the non-enforceable *Ontario Drinking Water Objectives* (“ODWO”). However, in the wake of the Walkerton Tragedy, the ODWO were entrenched as legally binding standards under the Drinking Water Protection Regulation (O.Reg. 459/00) promulgated under the *Ontario Water Resources Act* (“OWRA”). Currently, the Ontario government has proposed a draft regulation that would essentially roll these existing standards over to the SDWA.

Significantly, Mr. Justice O’Connor found that the Walkerton Tragedy was not attributable to a deficiency in the MACs or IMAC s adopted by Ontario. Instead, the Tragedy was caused, at least in part, by a systemic failure to ensure conformity with the ODWO:

The failures at Walkerton were not failures of the drinking water quality objectives as such but of the systems that were supposed to ensure they were met. Reviews of outbreaks... suggest that this pattern holds on a larger scale. As was

³¹ Bill 238, *Ontario Drinking Water Source Protection Act, 2002* (*Hansard*, December 12, 2002).

the case in Walkerton, operational, managerial and regulatory failures can lead to a major breakdown.³²

Nevertheless, Mr. Justice O'Connor found that some Ontario drinking water quality standards are less stringent than those imposed by other jurisdictions.³³ Similarly, Mr. Justice O'Connor identified some drinking water contaminants that require further scrutiny within Ontario's standard setting process. For example, Mr. Justice O'Connor noted that Ontario's Drinking Water Protection Regulation had not set standards for viruses or *Cryptosporidium parvum*.³⁴ In addition, he identified a number of substances – such as nitrates, pesticides, lead, disinfection by-products, fluoride, water treatment chemicals, endocrine-disrupting substances and pharmaceuticals – that warrant further regulatory attention.³⁵

Aside from these contaminant-specific remarks, Mr. Justice O'Connor also made key findings and conclusions regarding the standard setting process that is used to regulate drinking water contaminants. For example, he noted that the Federal-Provincial Subcommittee tended to operate without much public involvement or political oversight.³⁶ Accordingly, Mr. Justice O'Connor made a number of recommendations aimed at making the standard setting process more transparent, accessible and responsive to new and emerging threats to drinking water safety.³⁷ Significantly, Mr. Justice O'Connor expressly recommended that the precautionary principle should be used as the

³² Part 2 Report, page 148.

³³ Part 2 Report, pages 165-71 and Appendix A.

³⁴ Part 2 Report, pages 160-64.

³⁵ Part 2 Report, pages 165-66, 174-78.

³⁶ Part 2 Report, page 149.

³⁷ Part 2 Report, Recommendations 20-22, 25-26.

basis for standard setting, particularly with respect to drinking water contaminants whose effects on human health are unknown.³⁸

In response to the above-noted recommendations, Ontario's SDWA empowers the provincial Cabinet to prescribe drinking water quality standards, and requires the Environment Minister to establish an Advisory Council on Drinking Water Quality and Testing Standards.³⁹ The statutory mandate of the Advisory Council is to review and provide advice to the Minister regarding drinking water quality standards. To date, however, the Advisory Council has not been established in Ontario, and it appears that current drinking water standards under the OWRA (including 23 "interim" standards) will simply be rolled over to the SDWA without a formal review of their adequacy for the purposes of protecting human health.

It should be noted that the B.C. Drinking Water Review Panel made similar recommendations regarding the need to set and enforce strong, province-wide "tap water standards", and the need to establish an expert working group to establish "science-based" minimum standards.⁴⁰

³⁸ Part 2 Report, Recommendation 18.

³⁹ SDWA, s.4 and s.167(1).

⁴⁰ *Final Report: Panel Review of British Columbia's Drinking Water Protection Act* (February 2002), page 19.

5. What operational standards should apply to drinking water systems?

In addition to source protection and drinking water quality standards, it is widely agreed that the multi-barrier approach also requires appropriate standards governing drinking water treatment, distribution, monitoring, sampling, and reporting.⁴¹

(a) Treatment

Water treatment processes are generally intended to prevent harmful pathogens, chemicals or particles from reaching drinking water consumers, and to ensure that drinking water meets aesthetic objectives (e.g. taste, odour, clarity, colour, etc.). The nature and extent of treatment largely depends upon the quality of the raw water source (e.g. surface water or groundwater). In Ontario, the typical water treatment process consists of chemically assisted filtration (e.g. screening, coagulation, flocculation, sedimentation or flotation, and sand filtration) followed by disinfection (e.g. chlorination or ozonation).⁴²

In the Part 2 Report, Mr. Justice O'Connor made relatively few recommendations that specifically addressed water treatment, and he took note of innovative disinfection technology (e.g. UV radiation, membrane filtration, etc.) that may remove or inactivate chlorine-resistant pathogens.⁴³ At the same time, Mr. Justice O'Connor recommended that:

- all raw water should be characterized for parameters that could pose a public health risk, and that the results of such studies should be taken into account in designing and approving treatment systems (Recommendation 30); and

⁴¹ *Ibid*, page 20: “The Panel believes that province-wide treatment and distribution standards are a vital component of the multi-barrier approach to safeguarding drinking water.”

⁴² Part 2 Report, pages 189-98.

⁴³ Part 2 Report, pages 200-07.

- the Advisory Council should review Ontario's standards for disinfection by-products to take account of risks posed by the by-products of chemical and radiation-based disinfection (Recommendation 31).

Ontario's current Drinking Water Protection Regulation (O.Reg. 459/00) requires disinfection of groundwater, while surface water must generally be treated via chemically assisted filtration and disinfection (or equivalent). The draft regulation recently proposed under the SDWA would retain these treatment requirements, but specifies that wells under the "direct influence of surface water" (as defined by the regulation) are subject to surface water treatment requirements. However, drinking water system operators may obtain relief from these minimum treatment requirements under certain circumstances.⁴⁴

(b) Distribution

Drinking water distribution systems generally consist of watermains, valves, hydrants, service lines and storage facilities (e.g. reservoirs or stand pipes). As Mr. Justice O'Connor pointed out, such infrastructure is vitally important for the purposes of ensuring safe drinking water:

The distribution system is the final barrier before delivery to the consumer's tap. Even when the water leaving the treatment plant is of the highest quality, if precautions are not taken, its quality can seriously deteriorate. In extreme cases, dangerous contamination can occur...

A well-maintained distribution system is a critical component of a safe drinking water system. It is essential that water providers have adequate financing mechanisms in place so that their distribution systems can be properly maintained and renewed...

In a well-managed system, routine maintenance and system extensions are adequately financed to minimize costs and reduce risks to public health over the asset's lifetime. Routine maintenance includes flushing, cleaning, valve exercising and inspection...

⁴⁴ SDWA, ss.38, 54(4), and 60.

The continuous monitoring of water quality, hydraulics and system is undertaken with up-to-date Supervisory Control and Data Acquisition (SCADA) systems. Data are centrally archived and used for infrastructure management...

Backflow preventers stop the inflow of contaminants from cross-connections, dead ends, and pipe breaks, and all customers are metered.⁴⁵

Aside from the above-noted attributes of a “high quality distribution system”, Mr. Justice O’Connor made only two specific recommendations regarding distribution matters:

- federal, provincial and municipal governments should work with stakeholders to develop standards for materials (e.g. piping, valves, storage tanks and bulk chemicals) that come into contact with drinking water (Recommendation 34); and
- lead service lines should be located and replaced over time with safer materials (Recommendation 35).

Significantly, Ontario’s SDWA specifies that “drinking water systems” (e.g. any thing used for the collection, production, treatment, storage, supply or distribution of water) shall be:

- operated in accordance with requirements under the Act;
- maintained in a fit state of repair; and
- in compliance with prescribed standards.⁴⁶

(c) Monitoring

As noted above, Mr. Justice O’Connor concluded in the Part 1 Report that proper instrumentation and monitoring could have prevented the Walkerton Tragedy. In the Part 2 Report, Mr. Justice O’Connor again emphasized the importance of appropriate monitoring in the context of drinking water safety:

⁴⁵ Part 2 Report, pages 234-35.

Source water quality, treatment process control, distribution system integrity, laboratory services, inspection and enforcement, public confidence, and emergency responses all depend on accurate and timely information.⁴⁷

Mr. Justice O'Connor expressed a clear preference for continuous (or real-time) measurement of key drinking water parameters such as: turbidity; conductivity; pH; temperature; pressure; flow rates; and chlorine residual.⁴⁸ The results from such measurements can be used for process control (e.g. treatment adjustments), archived for compliance checks, and summarized for regulatory and public use. Accordingly, Mr. Justice O'Connor recommended that:

All municipal water providers in Ontario should have, as a minimum, continuous in-line monitoring of turbidity, disinfectant residual, and pressure at the treatment plant, together with alarms that signal immediately when any regulatory parameters are exceeded. The disinfection residual should be continuously or frequently measured in the distribution system. When needed, alarms should be accompanied by automatic shut-off mechanisms (Recommendation 36).

Ontario's SDWA imposes a duty on drinking water systems to comply with all prescribed testing and monitoring requirements. At the present time, for example, Ontario's Drinking Water Protection Regulation (O.Reg. 459/00) requires continuous chlorine residual monitoring for surface water systems serving 3,000 or more persons. The draft regulation proposed under the SDWA continues this requirement for "Municipal-Residential" class of drinking water systems, but permits other classes to use grab samples rather than continuous monitoring.

⁴⁶ SDWA, s.11(1), para. 2.

⁴⁷ Part 2 Report, page 248.

(d) Sampling

For some critical drinking water parameters (e.g. microbiological contaminants), real-time monitoring is technologically impossible at the present time. Therefore, it is necessary to ensure that qualified persons take frequent water samples at appropriate locations, and then send the samples to a competent laboratory for analysis. Time is of the essence in the context of microbiological testing because while samples are being collected, transported, and analyzed, drinking water consumers may be exposed to potentially contaminated water. This problem is compounded by the fact that it can take time to grow cultures in the laboratory in order to obtain presumptive or conclusive results about the presence or absence of microbiological contaminants.

Mr. Justice O'Connor noted that proper water testing requires more than just taking occasional samples from limited locations:

In this context, producing representative results requires going beyond taking a few samples at source, in the treatment plant, and in the distribution system. It must also entail taking measurements under conditions that challenge the system (e.g. after heavy rainfall, and at the farthest or most sluggish ends of the distribution system). It means gathering enough data to have confidence about water quality for each regulated parameter throughout the distribution system.⁴⁹

At the present time, Ontario municipalities generally rely upon private laboratories for microbiological testing of drinking water.⁵⁰ Mr. Justice O'Connor commented upon the important role played by laboratories in drinking water testing:

⁴⁸ Chlorine residual is the amount of chlorine that remains available to achieve disinfection after a given contact time: Part 2 Report, pages 249-50.

⁴⁹ Part 2 Report, pages 253-54.

⁵⁰ Routine testing of municipal drinking water by provincial laboratories was discontinued by the Ontario government in 1996: see Part 1 Report, pages 370-71.

Depending on the size and complexity of its system, a water provider might have anywhere from dozens to thousands of water tests on a weekly basis. The laboratories' test results provide data to support informed planning and decision making regarding the multi-barrier approach, including strategies for source protection, water treatment and the protection of the distribution system.

Laboratory testing also plays a critical role in determining whether contaminants are present in the system. In this regard, water providers adopt monitoring strategies that are oriented both to assessing the performance of the multi-barrier system (and thereby preventing contamination), and to identifying and reacting to contaminants after they have entered the system.⁵¹

Accordingly, Mr. Justice O'Connor recommended that:

- municipal water providers should be responsible for developing an adequate sampling and continuous measurement plan as part of their operational plans (Recommendation 37);
- sampling plans should provide for sampling under the most challenging conditions, such as after heavy rainfalls or spring floods (Recommendation 38);
- standard protocols should be required for the collection, transport, labelling, testing, and reporting of drinking water samples, and for testing all scheduled contaminants (Recommendation 39);
- the Ontario government should phase in mandatory accreditation of laboratories for all testing parameters, and all drinking water testing should be performed only by accredited facilities (Recommendation 41);
- the Ministry of the Environment should licence and periodically inspect environmental laboratories, and continuing accreditation should be a licence condition (Recommendation 42); and
- the results of laboratory accreditation audits should be provided to the Ministry of the Environment and should be publicly available (Recommendation 43).

In response to such recommendations, Part VII of Ontario's SDWA establishes a framework for the accreditation and licencing of laboratories that perform drinking water testing. Similarly, the SDWA generally prohibits drinking water systems from using

⁵¹ Part 2 Report, page 264.

non-licenced persons for drinking water testing,⁵² and further provides that drinking water systems must comply with prescribed sampling requirements.⁵³ Ontario's current Drinking Water Protection Regulation (O.Reg. 459/00) requires the use of accredited laboratories for microbiological, chemical/physical, and radiological standards. The draft regulation proposed under the SDWA generally retains this requirement, but also prescribes some situations where the use of an accredited laboratory is not mandatory (e.g. if the testing for a non-health parameter is carried out in accordance with an approval or order).

(e) Reporting

Mr. Justice O'Connor affirmed the need for prompt reporting by laboratories when adverse water test results are obtained:

The prompt and reliable reporting of test results by laboratories is especially important... when other barriers have failed and dangerous contaminants have entered the distribution system.⁵⁴

Mr. Justice O'Connor further noted that Ontario's current Drinking Water Protection Regulation (O.Reg. 459/00) entrenched a legally enforceable duty on laboratories to notify the Ministry of the Environment, local medical officer of health, and the drinking water system operator of adverse test results.⁵⁵ Mr. Justice O'Connor recommended that such requirements should remain in place, and, not surprisingly, the draft regulation under the SDWA retains these important reporting requirements.

⁵² SDWA, s.11(3).

⁵³ SDWA, s.11(1), para. 4.

⁵⁴ Part 2 Report, page 264.

⁵⁵ Part 2 Report, page 270.

In particular, the draft SDWA regulation requires immediate notice to the above-noted persons when the laboratory finds an indicator of adverse water quality (e.g. *E. coli*, total coliforms, or pesticides), an exceedance of chemical/physical standards, or an exceedance of a health-related parameter set out in an approval or order. Immediate notice means speaking in person or over the telephone, and the notice must be confirmed in writing within 24 hours. Upon receipt of such notice, the drinking water system owner is obliged to take prescribed “corrective action” (e.g. resample, flush watermains, increase chlorination, cease water use, boil water, etc.).

6. What is the provincial role in drinking water safety?

Given the current division of powers under Canada’s *Constitution Act, 1867*, provincial governments have generally taken the lead in regulating drinking water, although there is constitutional authority for a significant federal presence in drinking water matters.⁵⁶ In any event, provincial governments have generally utilized their constitutional authority to pass legislation intended to protect the environment and public health.

Interestingly, in the judicial inquiry into the North Battleford outbreak, Mr. Justice Laing questioned whether provincial jurisdiction is properly exercised where there is inadequate provincial oversight over drinking water safety:

The question may be asked whether the province [Saskatchewan] is fulfilling its constitutional responsibilities with respect to public health and with respect to water quality by devolving onto municipalities all responsibility to produce safe drinking water, without also providing a regulatory framework which gives some assurance to the public that the municipalities will carry out devolved responsibility in a manner that will in fact provide safe drinking water. Any

⁵⁶ Part 2 Report, page 35.

commentary I have read on this subject suggests that the answer is a very strong “no”.⁵⁷

Accordingly, Mr. Justice Laing clearly emphasized the need for effective provincial regulation of drinking water systems:

...[N]ot all municipalities have the knowledge, skill, or the will to manage increasingly complex water treatment processes. At the municipal level, operators change, administrators change, city councils change, technology changes, knowledge in the industry changes, and it is simply too much to expect that every little municipality is going to manage its way through all of these changes without some form of effective supervision from senior government.⁵⁸

Mr. Justice Laing therefore recommended various legislative reforms to create a specialized provincial “drinking water quality unit”, which should perform “rigorous” inspection/enforcement activities, coordinate the delivery of the safe drinking water program, and report annually to the Legislature on the state of drinking water in Saskatchewan.⁵⁹

In Ontario, the exercise of provincial jurisdiction has resulted in various laws (e.g. OWRA, SDWA, *Environmental Protection Act*, *Health Protection and Promotion Act*, etc.) that directly or indirectly relate to drinking water safety. Ontario’s lead ministry for drinking water protection is the Ministry of the Environment, which, in essence, sets drinking water standards and applies those standards to drinking water systems via approvals, permits, certification, monitoring, inspection and enforcement. Other provincial ministries – such as the Ministry of Health – assist in developing standards and ensuring the provision of safe drinking water in Ontario.

⁵⁷ *Report of the Commission of Inquiry* (March 2002), page 282.

⁵⁸ *Ibid.*

In the Part 1 Report, however, Mr. Justice O'Connor found that the Ontario government failed to properly exercise its oversight function in relation to Walkerton. In the Part 2 Report, Mr. Justice O'Connor made a number of recommendations aimed at strengthening the provincial oversight of drinking water systems. For example, Mr. Justice O'Connor recommended, *inter alia*, that:

- the Ontario government should develop a comprehensive, “source to tap” drinking water policy covering all elements of the provision of drinking water, from source protection to standards development, treatment, distribution and emergency response (Recommendation 65);
- the Ministry of the Environment should be the lead ministry for developing and implementing the “source to tap” policy (Recommendation 66);
- the Ontario government should enact a SDWA to deal with matters related to the treatment and distribution of drinking water (Recommendation 67);
- the Ontario government should create a Drinking Water Branch within the Ministry of the Environment to be responsible for overseeing drinking water treatment and distribution systems (Recommendation 69);
- the Ontario government should create a Watershed Management Branch within the Ministry of the Environment to oversee the development of watershed-based source protection plans (Recommendation 70);
- the Ontario government should create an office of Chief Inspector – Drinking Water Systems (Recommendation 72);
- the Ministry of the Environment should increase its commitment to the use of mandatory abatement (Recommendation 74);
- the Ministry of the Environment should increase its commitment to strict enforcement of all regulations and provisions related to drinking water safety (Recommendation 75);
- the Ministry of the Environment should initiate a process whereby the public can require the Investigations and Enforcement Branch to investigate alleged violations of drinking water provisions (Recommendation 76);

⁵⁹ *Ibid.*, Recommendations 26 to 28.

- the Ontario government should ensure that programs relating to the safety of drinking water are adequately funded (Recommendation 78); and
- the Drinking Water Branch should prepare an annual “State of Ontario’s Drinking Water Report”, which should be tabled in the Ontario Legislature (Recommendation 80).

To date, the Ontario has acted upon some – but not all – of the above-noted recommendations. For example, the SDWA has been passed (but not proclaimed in force), and this Act designates the Minister of the Environment as being responsible for overseeing the regulation of safe drinking water in Ontario.⁶⁰ Similarly, the SDWA requires the Minister to file annual drinking water reports with the Legislature, and creates the Office of the Chief Inspector.⁶¹

However, the comprehensive, “source to tap” policy envisioned by Mr. Justice O’Connor has not been developed to date by the Ontario government. Similarly, the Ontario government has not released any draft compliance regulations under the SDWA that require an increased use of mandatory orders or that entrench a “strict enforcement” approach to drinking water safety. Accordingly, it still remains to be seen whether Ontario’s new drinking water regime will be adequately funded, rigorously applied, and strongly enforced.

7. How should small drinking water systems be regulated?

One of the key questions in relation to drinking water safety involves whether – and to what extent – small drinking water systems (e.g. subdivisions, campgrounds, trailer parks, etc.) should be subject to regulatory requirements. In most instances, it is

⁶⁰ SDWA, s.3(1).

not technically difficult for small systems to meet regulatory requirements; instead, the challenge is to ensure compliance is achieved in an affordable manner.⁶²

The B.C. Drinking Water Review Panel described the challenges facing small systems as follows:

Some of the problems with small systems are lack of awareness and training about proper operation and monitoring, and lack of financial resources to safeguard drinking water. In some cases, systems are abandoned or there is no designated purveyor.⁶³

To address such concerns, the B.C. Panel recommended the development of an exemption procedure for small systems, and further recommended education, training, technical and financial assistance for small systems.⁶⁴

In the Part 2 Report, Mr. Justice O'Connor noted that the overall objective is to ensure that communal water systems – regardless of size – provide safe drinking water to consumers. Nevertheless, he, too, recommended that communal system owners should be allowed to apply for variances from regulatory requirements, but only if a risk analysis and management plan demonstrate that safe drinking water can still be provided to consumers.⁶⁵ Mr. Justice O'Connor further qualified this recommendation by stating that variances should not be granted solely for economic reasons,⁶⁶ and observed that

⁶¹ SDWA, ss.3(4), 7.

⁶² Part 2 Report, page 472.

⁶³ *Final Report: Panel Review of British Columbia's Drinking Water Protection Act* (February 2002), p.17.

⁶⁴ *Ibid.*, page 18.

⁶⁵ Part 2 Report, Recommendation 82.

⁶⁶ Part 2 Report, pages 473-74.

“innovations in management and technology will provide more fruitful avenues for smaller systems than will the relaxation of standards”.⁶⁷

In addition, Mr. Justice O’Connor recommended that new drinking water systems should not be approved if they would not be economically viable under the current regulatory regime.⁶⁸ Moreover, he recommended that existing systems that are not economically viable under the current regulatory regime should be required to explore all managerial, operational and technological options to find the most economical way of providing safe drinking water. If the system is still too expensive, then the Ontario government should provide financial assistance to lower the cost per household to a predetermined level.⁶⁹

In response to these recommendations, Ontario’s SDWA includes variance procedures (see above), and empowers the Minister to provide grants, loans and technical assistance to drinking water systems.⁷⁰

8. How should drinking water safety be ensured within First Nation communities?

There is overwhelming evidence that many First Nation communities in Ontario and across Canada have poor drinking water quality and high incidence of waterborne illness and disease. The main factors causing this unacceptable situation were summarized by Mr. Justice O’Connor as follows:

⁶⁷ Part 2 Report, page 481.

⁶⁸ Part 2 Report, Recommendation 83.

⁶⁹ Part 2 Report, Recommendation 84.

⁷⁰ SDWA, s.3(1).

- infrastructure that is either obsolete, entirely absent, inappropriate, or of low quality;
- lack of adequately trained or certified operators;
- inadequate testing and inspection;
- microbial contamination is frequent;
- inadequate distribution systems.⁷¹

While the federal government has primary constitutional authority in relation to First Nations, Mr. Justice O'Connor made a number of recommendations directed at both the federal and Ontario governments in relation to aboriginal drinking water systems. In particular, Mr. Justice O'Connor recommended that:

- Ontario First Nations should be invited to join in the watershed planning process (Recommendation 88);
- First Nations and the federal government are encouraged to adopt drinking water standards, applicable to reserves, that are as stringent, or more stringent, than standards adopted by the Ontario government (Recommendation 89);
- First Nations and the federal government should consider moving to a quality management standard (Recommendation 90);
- the Ontario government should require the Ontario Clean Water Agency to offer its services to First Nation band councils for operating on-reserve water systems on a normal commercial basis (Recommendation 91);
- the Ontario government should actively offer, on a cost-recovery basis, its training facilities and curriculum to First Nations water system operators (Recommendation 92); and
- as a matter of principle, the Ontario government should make technical assistance, drinking water testing, inspection and enforcement available to First Nations communities on a cost-recovery basis, if requested (Recommendation 93).

⁷¹ Part 2 Report, page 486.

It should be noted that the B.C. Drinking Water Review Panel concluded “drinking water should be safe to drink for all British Columbians, whether it is consumed on or off First Nations lands.” Accordingly, the B.C. Panel recommended that the provincial government “work with First Nations and the federal government to ensure that the provisions of the *Drinking Water Protection Act* are enacted on First Nations land, through whichever legal and fiscal mechanisms are most appropriate.”⁷²

9. How should manure management activities be regulated?

Agricultural activities – such as manure storage and spreading – are known to be potential causes of drinking water contamination. In fact, it was the spreading of manure in close proximity to Well 5 that led to the outbreak of disease in Walkerton, as described above.

Traditionally, Ontario had few regulatory requirements directed at protecting drinking water sources from contamination from manure management or other agricultural activities. However, in the wake of the Walkerton Tragedy, the Ontario government enacted the *Nutrient Management Act, 2002*. Among other things, this Act permits the Ontario government to set regulatory standards in relation to manure management (e.g. storage requirements, separation distances, timing of land application, content of nutrient management plans, etc.). There has been public consultation on draft regulations under the *Nutrient Management Act*, but the Ontario government has recently announced that the regulations will not be finalized or come into force until later in 2003 at the earliest.

⁷² *Final Report: Panel Review of British Columbia’s Drinking Water Protection Act* (February 2002), pages

Despite the existence of the *Nutrient Management Act*, Mr. Justice O'Connor made a number of farm-related recommendations. For example, he recommended that:

- the Ministry of the Environment should take the lead role in regulating the potential impacts of farm activities on drinking water systems. The Ministry of Agriculture, Food and Rural Affairs should provide technical support to the Ministry of the Environment and should continue to advise farmers on the protection of drinking water sources (Recommendation 11);
- where necessary, the Ministry of the Environment should establish minimum regulatory requirements for agricultural activities that generate impacts on drinking water sources (Recommendation 12);
- all large or intensive farms, and all farms in areas designated as sensitive or high-risk by the applicable source protection plan, should be required to develop binding individual water protection plans consistent with the source protection plan (Recommendation 13);
- once a farm has an individual water protection plan that is consistent with the applicable source protection plan, municipalities should not have the authority to require the farm to meet a higher standard of protection of drinking water sources than that set out in the farm's water protection plan (Recommendation 14); and
- the Ontario government should establish a system of cost-share incentives for water protection projects on farms (Recommendation 16).

There appears to be considerable public support for these recommendations, which will presumably be reflected in the forthcoming source protection framework and legislation (see above). However, it is also fair to say that some Ontario farm organizations are greatly concerned about these recommendations as well as the draft regulations under the *Nutrient Management Act*. Thus, it remains to be seen whether Ontario will actually set and enforce adequate legal controls on manure management in order to protect drinking water safety.

10. Who should operate drinking water systems?

A key component of drinking water safety is to ensure that qualified and competent operators are employed to run drinking water systems. Indeed, the Walkerton Tragedy amply demonstrates the danger of having poorly trained or unqualified persons performing important operational duties and responsibilities, as noted above.

Since 1993, Ontario has required operators to be duly certified for the class of facility in which they work. In particular, owners of drinking water systems must ensure that their operators hold appropriate licences, and must further ensure that operators receive a minimum of 40 hours training per year.⁷³ Mr. Justice O'Connor generally endorsed these existing requirements for operator certification/training, but concluded that there was room for improvement. Accordingly, he recommended that:

- the Ministry of the Environment should continue to require the mandatory certification of persons who perform operational work in water treatment and distribution facilities. Education, examination and experience are essential components of ensuring competence (Recommendation 59);
- the Ministry of the Environment should require water system operators who currently hold certificates obtained through the grandparenting process to be certified through examination within two years, and it should require operators to become recertified periodically (Recommendation 60);
- the Ministry of the Environment should require all applicants for an operator's licence at the entry level to complete a training course that has a specific curriculum to ensure a basic minimum knowledge of principles in relevant subject areas (Recommendation 61);
- the Ministry of the Environment should develop a comprehensive training curriculum for operators and should consolidate the current annual training requirements in Ontario Regulation 435/93 and the proposed requirement of

⁷³ O.Reg.435/93.

- ministry-approved training into a single, integrated program approved by the Ministry of the Environment (Recommendation 62);
- the Ministry of the Environment should take measures to ensure that training courses are accessible to operators in small and remote communities, and that the courses are tailored to meet the needs of the operators of these water systems (Recommendation 63); and
 - the Ministry should meet with stakeholders to determine the long-term training requirements of the waterworks industry. The ministry should play an active role in ensuring the availability of an array of courses on the subjects required to train operators (Recommendation 64).

Significantly, Ontario's SDWA provides that owners of drinking water systems must ensure that the system is operated by persons having the prescribed training and expertise, and that personnel at the system are supervised by persons having the prescribed qualifications.⁷⁴ Similarly, the Ontario Cabinet is empowered to pass regulations respecting operator certification/training.⁷⁵ To date, however, no draft regulations regarding operator certification/training have been released under the SDWA, which means that current requirements under O.Reg. 435/93 remain in effect for the time being.

PART III – CONCLUSIONS

On the evidence, Mr. Justice O'Connor found that the Walkerton Tragedy was caused by errors and omissions by various individuals, as well as by systemic failures at the local, regional and provincial levels. Accordingly, Mr. Justice O'Connor made numerous recommendations aimed at enhancing and strengthening the drinking water protection regime in Ontario. The Ontario government has indicated that it will act upon

⁷⁴ SDWA, s.11(1), para. 3 and 5.

⁷⁵ SDWA, s.167(3), para.9.

all of these recommendations, and has recently passed the SDWA in partial fulfillment of this commitment. Similarly, the province is poised to receive the much-anticipated report from the advisory committee on the watershed-based framework for protecting sources of drinking water. Clearly, in the wake of the Walkerton Tragedy, there has been renewed public interest, and demonstrable progress, in protecting drinking water and its sources in Ontario.

Nevertheless, at the present time, it is too early to assess the long-term effectiveness of Ontario's recent steps regarding drinking water safety. For example, the SDWA has not been proclaimed in force yet, and many key implementing regulations under the SDWA have not been released for public review and comment. Similarly, the details of the source protection regime have not been developed to date, and it will undoubtedly take considerable time for source protection plans to be drafted, approved, and implemented at the local level. Moreover, it is unclear how the source protection initiative is going to be integrated with other ongoing water-related reforms, such as the regulatory standards proposed under the *Nutrient Management Act*. Funding for drinking water programs also remains as a significant challenge at both the provincial and municipal levels, particularly as drinking water systems attempt to develop appropriate financial plans pursuant to the recently enacted *Sustainable Water and Sewage Systems Act*.

For these reasons, it remains to be seen whether Ontario's emerging regime for drinking water safety will be sufficiently protective of public health and prevent a recurrence of the Walkerton Tragedy.

March 7, 2003