

Brief Walkerton Inquiry

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Abstract

The traditional and even current legislative and institutional framework for regulating the provision of potable water services in Ontario, while similar to those in other jurisdictions in Canada and the USA is still paternalistic and controlling. Unlike those in other parts of the world which clearly set public health goals to be achieved and provide for a strict, criminal law basis for enforcement, the provincial government assumes a joint responsibility with the utility operator for the achievement of public health objectives - clean, safe, drinking water. Proficient and motivated operators are provided no relief from the onerous, administrative requirements, and the poor ones are comforted by the shared responsibility. The public health framework around drinking water supply requires additional research and funding, some streamlining, and must also be integrated with broader environmental management programs relevant to and arising in related sectors. The development and imposition of health-based standards for drinking water quality is fraught with problems of uncertainty (for example: transferring animal toxicity results to human health risks); uncertainty in analytical testing procedures (there are no ready, 100% certain tests for protozoan hazards); the difficulty of obtaining universal interpretation and acceptance of health risks and standards; the natural variability in source water quality; and the difficulty of treating water in some cases at reasonable cost make it particularly difficult to consider even province-wide, let alone national standards for drinking water quality if the goal is to be 100% compliance at all times. Small systems particularly are vulnerable and are at considerable disadvantage in terms of the ability to meet high per capita infrastructure costs, critical human resource needs and may not be following reasonable pricing policies. Solutions to this situation, in the form of alternative legislative and supply models, are available both in Ontario and elsewhere, and should be considered.

Who are we?

The Canadian Water and Wastewater Association (CWWA) was incorporated federally in 1988 with the following objectives:

1. represent to the Government of Canada the interests of those owning municipal water or wastewater systems;
2. together with or through member provincial and regional water and wastewater associations, represent the national interests of those owning municipal water or wastewater systems to provincial

- and territorial governments and to provincial, territorial or interprovincial agencies;
3. as appropriate, carry out the above activities in conjunction or following consultation with provincial, territorial and national Associations of municipalities;
 4. facilitate the exchange of information among those working in the water and wastewater industry, both inside and outside Canada, through conferences, public education, publications, seminars, training programs and other activities without duplicating the activities of the provincial and regional water and wastewater associations;
 5. encourage dialogue between the water and wastewater industry and the public on matters of mutual concern and interest;
 6. undertake or commission research and such other activities as may be required to further the interests of the municipal water and wastewater industry and the above objectives; and to
 7. do all such other things as are incidental or conducive to the attainment of the above objects.

CWWA's membership comprises organizations providing municipal water and wastewater services (Full Members), provincial and federal Departments and Agencies (Associate Members), public and private sector organizations that provide services and products to the water and wastewater service agencies (Subscribing Members), and regional water and wastewater Associations (Member Associations). The Governance structure comprises 17 provincial or territorial Directors representing municipal services and 7 Directors representing the 7 Member Associations.

CWWA wishes to submit the following to the Walkerton Inquiry on behalf of its members both in Ontario and across Canada.

Brief

The Walkerton Tragedy was the result of combination of circumstances including some or all of the following: complacency, inattention, negligence, under-funding, inadequate technology, a lack of foresight, a lack of training, and changes in the institutional and legislative frameworks governing drinking water supply operations. Other incidents have demonstrated similar circumstances, both in Ontario and across Canada, without the same tragic results. This has led the CWWA to consider the issues surrounding potable water supply particularly in smaller communities. A number of factors need to be recognized and taken into account.

Regulatory Framework

Ontario, like the other Provinces and Territories in Canada has taken a paternalistic role towards the provision and management of public water supplies, which is common with practices throughout North America but different from the practices followed elsewhere in the world.

In Ontario, public water supplies have to be licensed through the issuance of provincial certificates of operation governing the design, construction and operation of drinking water treatment plants and distribution systems, which certificate also set out the drinking water standards to be achieved, specified the monitoring programs to be performed and the reports on water quality to be made. Standards are

also developed for infrastructure design and construction. Inspections are conducted to ensure conformity with the requirements. Recently, regulations have strengthened the requirements, but basically still require prior provincial approval of the infrastructure and operations. Whether this institutional arrangement is adequately resourced and implemented is not the point CWWA wishes to make. CWWA wishes to draw to the Inquiry's attention that the alternative model, generally applied throughout the developed world, is more performance based. In the alternative model, the central government establishes in law water quality standards that it expects public water supply systems to meet in the interests of public health, establishes monitoring and reporting requirements that the supplier has to perform, and establishes offenses and penalties (normally criminal in nature) for failure to meet the standards. The central government has an independent national water quality monitoring agency to verify performance compliance. In some countries, the water supplier may also be subject to economic oversight to guard against monopoly pricing practices.

The inclusive and comprehensive approach taken generally in Ontario (coupled with lax enforcement) provided an environment in which the less diligent public water system operators could perform badly and not be noticed, and yet at the same time have the comfort of having a provincially provided certificate of approval. This institutional arrangement could have contributed to the apparent sense of non-involvement and lack of personal responsibility on the part of the staff and management of the Walkerton Public Utilities Commission. It may also inhibit the emergence, introduction and application of innovative technologies.

The response of the government to the Walkerton Tragedy has simply been to reinforce the traditional model with more resources and requirements. This does nothing to recognize the good performance and commitment of diligent water suppliers (since they are also subject to the new requirements) and does not necessarily engender in the others, the essential sense of public duty and commitment, as well as the personal responsibility necessary to successfully provide potable water services. It may also continue to stifle the introduction of new technology. This provokes the question: is this institutional arrangement the most effective one to meet public health requirements for public water supply systems?

Infrastructure Needs, Costs and Revenues

The provision of drinking water, even from the traditionally considered protected water supplies of groundwater sources, requires increasingly complex treatment infrastructure and the maintenance of distribution systems often serving multiple purposes (potable water supply, water supplies for fire protection and for irrigation and street cleaning). The cost characteristics of the two components are different. Treatment plants require a minimum capital investment that is not population sensitive: i.e., a town of 1,000 and a town of 10,000 pretty well will have the same capital investment, and it is only when the population to be served exceeds these levels that any economy of scale will come into effect. The capital investment needed for distribution systems, on the other hand, tends to increase in more or less direct proportion to the population. Thus the per capita cost of treatment plant investments is much higher for small centres than for large, while the per capita cost of distribution systems remains much the same over wide population groupings. The conclusion of this is that normal pricing policies for water supply cannot reasonably generate the revenues necessary for small centres to invest in their capital

infrastructure, while larger centres can do so. Past infrastructure assistance programs have attempted to compensate for this fiscal reality. Related to this is the pricing policies of municipalities and the provincial government.

It is the policy of CWWA that municipal water and wastewater services should recover the full costs of providing the services, including capital and operating costs. This longstanding policy has been reflected in policy statements now being made by the Federation of Canadian Municipalities and its provincial/territorial counterparts . Not all municipal water and sewer rates reflect this policy.

Potable water is sold in Canada at two price levels - municipal water suppliers have to charge for water provided on the basis of **costs** (municipal water supply is a “right” and municipalities are not-for-profit organizations); private water suppliers (e.g., bottled water) charge on the basis of **value** (how much will you pay when you are thirsty). The average price for municipal water is about 0.03 cents per litre ($\$0.30/m^3$) and prices range from 0.01 to 0.1 cent per litre ($\$0.10/m^3$ to $\$1.00/m^3$). Some municipalities do not even charge directly for water and sewer services - the costs are simply included in the property tax. Comparatively speaking, bottled water prices range from \$1.00 for a 375 mL bottle (in a convenience store) to \$3.00 for a 25 L bottle (in a distribution outlet). On a comparative basis, these prices are from 12 times to 4,000 times the price of municipal water.

Without reasonable revenue flows, small municipalities will never be able to generate the kind of investments needed to produce and distribute high quality water, their customers will not value the water that is produced, and the present cycle will continue.

Operator Training and Competence

A situation similar to the infrastructure problem exists for small supply systems in respect to operator training and competence. Smaller systems rarely have full time water treatment and distribution system operators who, faced with conflicting tasks and duties in the municipality, have difficulty prioritizing their duties and training needs and competencies. In addition, the fiscal reality of the small municipality may also inhibit acquisition of skills and knowledge and certainly its maintenance to current levels.

Related to this is the fact that most training materials available or required, have focussed on the technical aspects of treating water or of distributing it, without impressing on the operators that there is an over-riding public health duty and responsibility that should pervade their every thought process and action, and which should be the number one concern. While public health aspects are part of the current training programs, it is subjugated by the rest of the material which emphasizes the what has to be done, rather than reiterating why it has to be done. Water treatment and water distribution operators should recognize that they are as much in the front line of securing public health as restaurant employees who prepare and serve food, or nurses working in hospitals and dental hygienists in a dentist’s office.

Drinking water standards

CWWA supports the concept of national drinking water standards - that all Canadians should be able

to receive potable water. Presently recommendations for drinking water standards are established through the Federal-Provincial-Territorial Drinking Water Committee, a subcommittee of the Committee on Environmental and Occupational Health (CEOH) - a federal-provincial-territorial committee of senior officials from the Health, Environment and Labour ministries. CEOH is authorized by the Ministers of Health to issue standards and guidelines in various areas including the *Guidelines for Canadian Drinking Water Quality*. These are based on health risk assessments of chemicals and organisms likely to be found in water supplies. The assessments are made largely on published scientific data and as necessary on direct toxicological studies on animals. Generally, there is a fairly significant uncertainty factor (up to 10 times) applied to translating animal toxicity findings into a level for human health risk determination. In the past, these *Guidelines* have been just that, recommendations for potable water qualities, with the understanding that not all water supply systems could or even should achieve the *Guidelines* on the basis of their water source, the treatment technology available to them, the degree to which the *Guideline* was exceeded, and the priority attached to meeting other *Guidelines*. While efforts should be made to meet or even exceed the *Guidelines*, priority is always given to meeting microbiological standards due to the acute health risk over chemical standards (normally a chronic health risk). For example, naturally occurring levels of nitrates, boron or radon in groundwater sources might exceed the *Guidelines* to some extent in some areas of the country due to naturally occurring geological structures in which the water is located. Surface waters can also be affected by the geology of the area through which the water passes. This phenomena can occur between water sources in even close proximity and certainly will occur within the length and breadth of Ontario. The difficulty is dealing with the uncertainty factor in translating animal toxicity data to humans. As *Guidelines*, establishing levels that err on the side of caution is reasonable, but when the level is proclaimed as a standard, and investments in treatment technology have to be made, then issues of costs and benefits have to be taken into account because the availability of capital is scarce. From a public policy perspective, is it better to invest in technology to reduce nitrate levels in drinking water by a small amount in order to meet a Guideline/Standard? or is it more appropriate to invest the funds in another public health, environmental or public safety program? This is the dilemma facing the community and one that is compounded by uncertainty factors, especially if the health risk being protected also arises from other sources such as food, social customs and habits.

CWWA is also concerned about the willingness or ability of the general public to understand the science behind developing *Guidelines* (to be worked towards) and the issue of making them standards (which have to be met). Activist groups are very skilled in raising public concerns and often want a risk-free environment. National even Province-wide standards then have to be very carefully considered from the point of health risk-benefits, and perhaps even health / environment / public safety benefits.

Analytical Tests

CWWA notes that the presence of some microbial risks is difficult to determine. Testing for Total Coliforms is a standard test, and is used as a surrogate for the presence of other particular pathogenic risks including E-coli, although it should be noted that not all coliforms, including not all E-coli strains are harmful to humans. Protozoa (notably cryptosporidia and giardia) which also come from fecal contamination of water supplies, are also of concern. The difficulty faced is the reliability and speed of

test methods. There are no 100 percent certain quick tests for these health risks, and for the protozoa, testing is particularly difficult. Often, the symptoms of an infection are present in the community before the test results (indicating a risk) are available and of course there is difficulty in detecting the widespread occurrence of a health risk because of the nature of medical services and the assumption of most individuals when faced with a gastro-intestinal condition, that the situation will pass.

CWWA believes that further efforts should be made to improve the testing and detection of health risks specifically in the water services and generally within the community health system.

Interpretation of health-risk standards

A specific example of the variability in interpretation of health risks can be found in the practices of issuing boil water orders. Where the presence of coliforms is detected (as an indicator of a microbial risk), the standard practice is to immediately take a second sample while increasing the level of disinfection. The reason for this is that the first sample might have been contaminated in the sampling process. In some jurisdictions of Canada, a boil water order is only issued after confirmation through the second test, in others it is issued immediately. Boil water orders are often cancelled after the source of the coliform has been identified and there have been two clear days with a zero detection level, but not always. The issuance of a boil water advisory has a profound effect on and in the community - both economic and social - and for this reason there are varying degrees of willingness to do so, and also varying interpretations as to when the order should be imposed and lifted. CWWA believes it would be of value for a uniform policy to be established, not only within Ontario, but across Canada.

Watershed Aquifer Recharge Area Protection

Drinking water standards for treated and delivered water are most easily achieved when there are effective watershed and aquifer recharge area protection programs in place and this has been well-known in the municipal water services sector for decades, if not centuries. Where municipalities can access protected areas or protected aquifers they do. Where municipalities can protect these areas, most have done so with various access and use limitations imposed through by-laws. Unfortunately there is no universal program carried out by municipalities, nor in many cases, the ability to do so due to jurisdictional boundaries (shared watersheds and aquifers, etc.). Even provincial governments who manage the water resources of the province have not acted in this area, and there remains the issue of inter-jurisdictional waters (province to province, Canada to the USA). CWWA supports watershed and aquifer recharge area management programs and policies, but recognizes that this will extend into many economic sectors including agriculture, mining, and forestry and can involve the long range transport of contaminants over great distances.

Small system solutions

CWWA through its national perspective has noted that the resource and operator/management problems of small systems can be overcome in a number of ways, with Ontario providing a number of examples.

A primary method is the contracting of the water system operation and management by external competent organizations. This method takes the form of various public and private sector services including the Ontario Clean Water Agency (a provincial public sector service), management services by private sector organizations (including consulting engineering firms and various private companies), and can include municipal management services (some larger cities may manage the water services of smaller towns and villages). There are examples of the first two in Ontario, although it is not believed that municipalities in Ontario have contracted to manage the water systems of other municipalities.

Inter municipal relationships in Ontario have been largely limited to one municipality contracting to supply potable water to a neighbouring municipality which then assumes responsibility for the distribution system. This so-called “wholesaling” service is very common, both between independent municipalities and from regional municipal governments to their constituent municipalities.

An alternative model, found at least in Manitoba, is the municipal water cooperative, where a number of small municipalities band together to form a “water cooperative” that undertakes joint investment in a single or a number of larger treatment plants (with the benefits of scale) that then provides water to all the members municipalities of the cooperative through advanced pipeline technology.

Conclusions

The traditional approaches followed in Ontario for municipal water supply have been largely very successful. The Walkerton Tragedy is considered to be an aberration, and one that should not have occurred. An analysis of the approach followed suggests a number of weaknesses that could be corrected and possibly that a different path could have some merit.

The heart of a safe drinking water supply has to be a commitment to the achievement of public health objectives and the acceptance of a personal responsibility at all levels of the organization to achieving those.

The present regulatory program may achieve the public health objectives, but it may not implicitly engender the latter, since the province continues to assume a direct and paternalistic role in determining the fundamental conditions of the public water supply. The question to be posed and answered is: *would a performance requirement for meeting water quality standards based on criminal instead of administrative law provide a better stimulus to achieving personal commitments by all employees and managers in the system?*

While there is considerable confidence in the drinking water *Guidelines* produced through the federal-provincial-territorial process, it must be recognized that these are established with a clear understanding that there are uncertainty factors to be accounted for, and that naturally occurring variations in source water quality will result in different and sometimes very difficult challenges for different municipal water supply systems across the Province and across Canada. Interpretation and acceptance of the *Guideline* levels is a difficult matter, involving varying professional opinions and degrees of public acceptance. Analytical test methods and standards despite many decades of development are still

lacking in some cases, notably to determine quickly and readily the presence of viable, human pathogens.

Watershed and aquifer recharge area protection programs are essential, but often beyond the capability and even authority of the municipal government acting alone. Provincial and territorial governments have been reluctant to initiate such programs, which often involve multi-jurisdictional issues and cross sectoral concerns with economic impacts being felt in sectors and areas different from the sectors and regions receiving the benefits.

Most municipal residents do not appreciate (value) municipal water supplies nor are they charged prices which reflect even partially this value, just its costs. Municipalities and their residents have to recognize that safe public water supply systems are both essential and require investment in infrastructure and the human resources needed to operate it. Where economies of scale are not readily apparent, there are examples of alternative methods of achieving them. The alternatives involve both public and private sector models but achieve the essential objectives of being able to make the necessary critical mass investments in infrastructure and human resources.

The municipal water sector must recognize at all levels that it is not just providing a technical service (potable water supply) but a service which is critical to public health and the safety of the community. This goal can only be achieved by creating closer links between the water supply sector and the public health community and by incorporating a pervasive sense of personal responsibility for public health at all levels within the water treatment and distribution community of employees and managers.