

WALKERTON INQUIRY - PART 1A & B

Concerned Walkerton Citizens

Summary of Findings



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August 9, 2001

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WALKERTON INQUIRY – PART 1A & B

ON BEHALF OF CONCERNED WALKERTON CITIZENS

SUMMARY OF FINDINGS

Section II A: Pathogens into the Aquifer

There have been assumptions in the past, including on the part of those dealing with the Walkerton water supply, that “groundwater” is a “good”, safe source of water; that its characteristics are stable; and that it is not subject (normally) to bacteriological contamination.

In the case of Walkerton such assumptions proved to be unfounded. Based on prior and historical information, the vulnerability of the aquifer to bacteriological contamination should have been known by the Public Utility Commission (PUC), the Ministry of the Environment (MoE) and the local health unit.

Section II B: Contaminated Wells and Treatment Failure

In April and May 2000, Walkerton’s drinking water was being supplied by three production wells, known as Well 5 (established 1978), Well 6 (established 1982) and Well 7 (established 1987).

Wells 5, 6 and 7 are located in karst aquifers, which are characterized by rapid groundwater flow through interconnected networks of solutionally enhanced openings in the bedrock.

The karstic nature of the aquifers made Wells 5, 6 and 7 vulnerable to contamination due to surface water influence, as was amply documented in numerous reports from 1978 to May 2000.

PART II C: Contamination Entering the Distribution System May 2000

Well 5 was known to be particularly vulnerable to contamination due to the shallowness of the aquifer, the thin and fractured overburden, and the proximity of nearby livestock farming operations.

There is an overwhelming case that Well 5 was the only well source of the bacteriological contamination of Walkerton’s distribution system in April and May 2000.

In late April 2000, cattle manure containing E. coli O157:H7 had been spread approximately 100 metres from Well 5.

There was no run-off collection system beyond the concrete pad; and/or more diffuse contamination from manure spreading (by the adjacent farm or others) just prior to the rainstorms in those times.

E. coli O157:H7 can survive in the soil and groundwater for prolonged periods of time, particularly, in cool, wet conditions.

The excessive rainfall events of April and May 2000 (especially May 12th) likely permitted *E. coli* O157:H7 to penetrate downward through breaches in the overburden into the shallow aquifer, which quickly transported the bacteria to Well 5 and nearby springs within days or hours.

After the May 12th rainfall, bacteriologically contaminated (and turbid) raw water at Well 5 created an excessive chlorine demand that likely overwhelmed the chlorination system, which meant that the water was not effectively disinfected prior to entering the distribution system.

For various reasons, there was likely little or no chlorine residual within the distribution system that was capable of disinfecting the contaminated Well 5 water prior to its delivery to Walkerton residents in May 2000.

It is unlikely that the bacteriological contamination of Walkerton's distribution system in May 2000 was caused by the Highway 9 construction project, or by contamination originating from Wells 6 or 7.

II.D - Oversight of Drinking Water Quality

Walkerton PUC

Prior to and during May 2000, Walkerton PUC Commissioners failed to exercise adequate oversight over PUC planning and management to ensure the health and safety of Walkerton residents.

Prior to and during May 2000, the Walkerton PUC Manager, Foreman and waterworks staff failed to exercise due care and skill by engaging in long-standing and clearly inappropriate water-related practices, particularly in relation to water testing, treatment and reporting.

Municipality of Brockton

Prior to and during May 2000, the Municipality of Brockton failed to exercise adequate oversight over PUC planning and management to ensure the health and safety of Walkerton residents.

Health Unit

As of May 2000, the Bruce Grey Owen Sound Health Unit had received no written adverse results relating to the Walkerton water system since the 1996 divestiture of labs by the Ministries of Environment and Health. The health unit was therefore unable to discharge its responsibility for oversight of the Walkerton water system.

On the other hand, if the health unit had proactively reviewed its records from all water systems in its area it should have noticed that it was receiving no written adverse reports from Walkerton.

Both local health units as well as many of the provincial officials in the public health and laboratories branches of the Ministry of Health were of the view that municipal drinking water oversight was not so much their responsibility, but the responsibility of the MoE. This led to a very small allocation of resources to health units for municipal water oversight, as well as to formal policy changes in the mandatory health unit guidelines, reducing health units' roles to reliance on information from other sources, and to a reactive rather than a proactive approach.

Ministry of the Environment

By the early 1990s, Southwest Ontario was enduring seriously increasing problems of bacteriological contamination.

By the mid-1990s, the government focused its priorities on regulatory reform and point source pollution (and de-emphasized non point pollution like nutrient controls, groundwater contamination and the like).

While there was a long history of adverse results within Walkerton, the MoE did not have the focus and or the capacity to understand the implications of those results or take corrective action.

The problems at the Walkerton waterworks were clearly identified in a series of inspection reports, including issues like sampling frequencies, and but were not followed up upon. MOE focussed on ensuring voluntary compliance as opposed to mandatory abatement in the mid-1990s.

The MoE in the mid-1990s underwent a shift in policy and placed a priority on voluntary compliance and partnerships with the regulated community as opposed to enforcement.

Threats to groundwater contamination and the need for action were communicated to the MoE by the Environmental Commissioner's Office and non-governmental groups.

Numerous MoE documents frequently raised concerns about the adverse impacts on staff and resource reductions would have on environment and human health.

These risks were communicated by staff to deputy ministers to ministers and eventually to cabinet. Management board staff noted that the analysis by MOE staff was "realistic."

Neither the deputy minister nor the cabinet requested that a risk management plan be prepared to address the negative impacts that were expected to result to the environment and human health from the substantial reductions.

The Premier knew, or had access to business plans and other information submitted to Cabinet which outlined the increased risk to the environment and human health arising from the budget reductions. He did not act in any way to address them. He relied solely on the Environment Ministers to address these matters.

Ultimately, the Premier, as the leader of the government, is responsible for the actions of his government and his ministers and in particular, for the impacts and risks associated with the dramatic resource and funding reductions and other regulatory and policy reforms.

III E Laboratory Testing and Notification

The closure of the provincial water testing laboratories was undertaken with inadequate notice to municipalities and without appropriate measures and a transition plan by the MoE to ensure a proper transition to private laboratories.

There was confusion as to the obligations of private labs to report adverse drinking water results arising from a number of factors, including the unfamiliarity of the labs with the Ontario Drinking Water Objectives, the quick closing of the provincial labs and the lack of a MoE transition plan to assist in the change from public to private labs.

A & L's Laboratories' unreasonable interpretation of the Ontario Drinking Water Objectives led it to believe that it was not obligated to report adverse drinking water results.

The Minister of the Environment should have amended the *Ontario Water Resources Act* (OWRA) to provide clear requirement for notification of adverse results. The Health Minister raised a very serious concern regarding the OWRA and it deserved the utmost attention.

One factor that contributed to the decision not to amend the notification requirements was the "chill" for new regulatory initiatives that was caused by the work of the Red Tape Commission.

The Ministers of the Environment must accept responsibility for the impacts arising from the privatization of the provincial water testing labs and the delay in clarifying the notification provisions of the Ontario Drinking Water Objectives.

Formal and comprehensive regimes for accreditation and certification were not required for private labs that undertook testing for microbiological parameters.

III F Outbreak detection

The earliest opportunity for mitigating and preventive action (apart from action that should have been taken when chlorination equipment was unavailable) was in the hands of A&L Laboratories, once it found adverse results in Walkerton's water samples, and of the Walkerton PUC, once it received notice of the results on the morning of Wednesday, May 17th, 2000.

The MoE should have received independent notification from the lab and alerted the health unit and this would have also provided an opportunity for reaction by the health unit. Although many people would have already been exposed to the pathogens in the system by May 17th, 2000 (because the results reflect samples taken earlier), each earlier date of intervention, e.g. by a boil water advisory or by shutting down the system, had the potential to have prevented hundreds of cases of illness.

Given the failure of Stan Koebel to advise the MoE or the health unit about the adverse sampling results on May 17th, 2000 and in the following days, (which on their own should have prompted a boil water advisory, even without the occurrence of the outbreak), the next opportunity for action came with the first signs of the outbreak.

Water as the potential source was down-played by the health unit. This resulted in a delay of the health unit in reviewing their own records of the Walkerton water system, less focus on water in the initial investigation, delay on the part of the health unit to take its own water samples, the health unit relying on unverified assurances by the PUC, and the health unit passing on unverified information to other persons and agencies.

PART III - System Findings and Recommendations

IIIA - Multi-Barrier Protection of Drinking Water

Drinking water protection requires a multi-barrier approach. Drinking water systems must not rely on only one or few barriers.

An important aspect of a multi-barrier approach to safe drinking water was described by Dr. Hukowich as the necessity of having "multiple pairs of eyes and multiple hands that go up at the first concern, because not everybody shares the same concerns about the same particular issue..."

Multi-barrier drinking water protection must include a robust emphasis on at least five elements of the system: source protection, water treatment, distribution, monitoring and response to adverse monitoring results. Furthermore, this system and all of the elements within it must be able to withstand "upsets" to the system.

III.B - Resources

There has been over a 50% reduction to MoE staff since the early 1990s and somewhere between a 36% to 39% reduction between 1995 and 2000 with the consequence that the reductions affected the ability of the Ministry to carry out its mandate.

The resource reductions did impact Operations Division with significant reductions including at least a 25% reduction in staff, including a reduction of 20 staff from the Investigations and Enforcement Branch and 37 Environmental Officers' positions.

Within the context of these reductions, communal water lost both its priority and focus with an over 50% reduction with respect to staff resources from 1996 to 2000.

The Southwest region was impacted by staff and budget reductions. These reductions contributed to the Walkerton tragedy by decreasing the overall capacity for staff to address communal water systems. This was accelerated with the growing demands and workload of the Ministry.

The process to develop budget reductions was inappropriate since it was blind to the actual needs of the Ministry to protect public health and the environment.

III.C. Ministry of the Environment Inspections

Site inspections of waterworks facilities are very important for measuring compliance and deterring facilities from going out of compliance. In particular, the Sewage and Water Inspection Program (SWIP) was set up in response to the concerns raised by the 1988 Provincial Auditor's report.

The MoE in June of 1995 advised all municipalities in the southwest region concerning sampling requirements and advised them that a mandatory approach would be applied to ensure compliance.

Walkerton was on a list of non-compliance municipalities in July of 1997 but was not on the list by October 1997 because it had informed the local district office that it would comply with the minimum sampling requirements.

By 1997, the MoE did not take a mandatory abatement approach even though it was aware that at least nine municipalities were out-of-compliance with sampling requirements.

During the entire decade of the SWIP program, there were few, if any, Director's orders. Similarly, there were very few field orders that were issued to municipal water treatment plants. There were no director or field orders issued against Walkerton.

The MoE only shifted its approach from voluntary to mandatory abatement after the Walkerton tragedy.

IIID. Ministry of the Environment Enforcement

Most operating certificates for waterworks did not include any terms or conditions that would be subject to enforcement action if they were violated. Similarly, the ODWO was only a guideline that could not be legally enforced.

In the mid-1990s, the MOE undertook a shift in approach from legal enforcement actions to voluntary compliance.

There were also significant reductions to staff and resources pertaining to enforcement.

The number of fines obtained from enforcement activities declined after 1995.

Historically, the MOE had not undertaken aggressive enforcement policy toward municipalities.

IIIE Contingency Plans and Remediation Plans

A more precautionary approach to the issuance of a Boil Water Advisory whereby the advisory would have been issued earlier would have been preferable and appropriate.

Notification measures for the issuance of the Boil Water Advisory were inadequate in that the health unit only relied on the medium of radio to communicate the advisory to the public. The advisory itself should have been more extensive and instructional in nature.

Institutions, such as one nursing home, were not specifically notified and this lack of notification could have contributed to more illness but for the precautionary approach of the nursing home.

The municipality did not sufficiently assist the health unit in ensuring that the Boil Water Advisory was communicated to the public. A state of emergency should have been declared by the Municipality of Brockton.

The PUC should have had its own contingency plan and the lack of the plan contributed to confusion among those with responsibility to respond, and to the lack of appropriate communication.

PART IV Overarching Findings and Recommendations

IV.A Inter-Agency Communication and Data Sharing

A significant issue leading to the tragedy at Walkerton was the lack of inter-agency communication and data-sharing in several respects, pertaining to the drinking water supply system. This issue was systematic in that there were no protocols, policies or procedures to ensure such communication and data-sharing.

There were gaps in the overall system; a lack of sufficient redundancy and “fail-safe” measures to avoid a single failure going unnoticed and causing a tragedy, and the roles and responsibilities of each agency were not sufficiently clarified.

There was a lack of accountability for the drinking water system in Ontario. A persistent theme in the evidence was that those involved in the drinking water system, both on a local level and at the provincial level frequently stated that their responsibility for drinking water was quite limited. No clear statutory responsibility was in place.

IV.B The Public Right to Know

One of the first major legislative initiatives of the government after being elected in 1995 was to exempt the Ministry of Finance from the requirements of the Environmental Bill of Rights (EBR) and temporarily suspend the public notice requirements under the EBR with respect to environmental proposals which related to the government's cost-cutting measures.

The government also stopped publishing State of the Environment reports, which used to provide a comprehensive overview of the environmental conditions in Ontario. This report was important to the government's planning process in establishing priorities for environmental protection since it identified present and emerging risks to Ontario's environment.

Until 1994 MoE used to publish an annual record of its enforcement activities in a publication entitled, "Offences against the Environment." Once this publication ceased, enforcement records regarding the number of prosecutions and fines had to be obtained through requests made under the *Freedom of Information and Protection of Privacy Act*.

Government also failed to disclose information it had about the increased risk to the environment and human health as a result of the budget cuts outlined in its confidential business plan.

IV.C Financing and Governance of Waterworks

At all times, the Walkerton PUC and the Town of Brockton had sizeable reserves, adequate revenues, and sufficient debt capacity to maintain and upgrade the water supply

and distribution system, but they both failed to fund or undertake a number of timely measures to protect drinking water safety (e.g., wellhead protection, Well 5 refurbishing, duplicate chlorinators, automatic chlorine residual analyzers, etc.).

The PUC Commissioners were not sufficiently informed of their "business" in providing safe drinking water and, as such, were not aware of relevant and important issues and matters in the field. They did not clearly understand their role to include oversight of health and safety aspects of the drinking water system that they supervised.

IV.D Training

There was decreased emphasis on technical training of MoE staff throughout the 1990s.

There was not a focused training regime with respect to communal water. There was little evidence and focus on informing staff and making them aware of new strains of pathogens in drinking water.

There has been a steadily decreasing budget and resources for training since the early 1990s.

There was insufficient effort to ensure that operators who were grandfathered into operator certification qualifications were sufficiently competent for those positions.

Operator training, including Stan Koebel's training, was not sufficiently comprehensive and robust, particularly with respect to monitoring, disinfection, treatment and new and emerging pathogens.

Stan Koebel, the PUC manager and Frank Koebel, the foreman, were grandfathered under the operator training regulation. Accordingly, they had never undergone any testing or formal training on operating a municipal waterworks.

The increasing cost of training was a disincentive to a more comprehensive and robust training regime.

IV.E Safety Culture

Health unit staff and MoE staff worked on a trust basis with PUC's regarding the drinking water system. This led to inadequate in-depth scrutiny and evaluation of the operations and results reported, such as the failure of MoE inspection staff to look at and notice systematic falsification of chlorine residual results, as well as the failure to notice systematic falsification of reports as to quantities of chlorine added to the system.

There was also institutional reluctance (contrary to the inspector's recommendation) to take mandatory approaches to enforcement against municipalities and a highly inadequate follow up system for voluntary abatement approaches.

With the governing voluntary approach, the mere statement of an intention to comply with the deficiencies noted was sufficient to close the occurrence report (and usually occurrence reports were not even used for voluntary approaches).

The voluntary approach did not provide assurance that the issues had actually been dealt with compared to mandatory approaches, which would have required proof of compliance before a matter could be considered “closed” by the MoE officers.

With respect to health unit staff, the result of a non-skeptical approach was an un-verified reliance on statements by PUC staff that there were no adverse results or problems with the Walkerton water during the outbreak investigation. This also caused repetition of these assurances to others, such as the media and institutions prior to and even after the issuance of the Boil Water Advisory.

IV.F Legislative Amendments

Prior to May of 2000, there was uncertainty among Walkerton PUC staff, regulatory officials and laboratory operators about the legal status and enforceability of the Ontario Drinking Water Objectives.

In order to remedy the non-enforceability of the Ontario Drinking Water Objectives, the Ontario government previously proposed in 1990 to enact a *Safe Drinking Water Act*. To date, no government has enacted such a statute.

Based on the evidence in this hearing, the enactment of a new *Safe Drinking Water Act* is both required and appropriate.

The presence of a *Safe Drinking Water Act* in May of 2000 may have helped to prevent the Walkerton tragedy by providing a firmer legislative basis for mandatory abatement, by clarifying roles and responsibilities, by setting out clearer duties to report and act upon indicators of unsafe drinking water and by establishing accountability for safe drinking water in Ontario

The *ex post facto* passage of the *Drinking Water Protection Regulation* (O.Reg. 459/00) (DWPR) allows the inference that Ontario knew (or reasonably ought to have known) that the province's pre-May 2000 drinking water regime was inadequate to protect public health and safety.

The DWPR is not sufficient to address all the concerns arising from the tragedy and supports the need for a new statutory regime. A *Safe Drinking Water Act* should be the legacy of the Walkerton tragedy.