January 31, 2001

To: Audit Committee

From: City Auditor

Subject: Water Quality Audit

Purpose:

To report on the quality assurance processes in place pertaining to water quality in the City of Toronto.

Financial Implications and Impact Statement:

There are no financial implications in regard to this report.

Recommendations:

It is recommended that this report be received for information.

Background:

The 2000 Audit work plan, approved by Audit Committee on March 29, 2000, provided for an environmental audit on Water Quality. We had planned to review the water treatment and quality assurance processes, including water sampling and analysis, at two water treatment plants operated by the Water and Wastewater Services Division of the Works & Emergency Services Department. Our primary objective was to identify and ensure compliance with relevant legislative and regulatory requirements.

Our annual Audit work plan is developed based on a number of risk factors, including environmental and health risk as well as legislative requirements. The Water Quality Audit was included in our 2000 work plan, based on this risk assessment process. Our 2000 Audit work plan was developed prior to the Walkerton tragedy and the resulting changes to Provincial regulations governing water treatment and distribution systems.
During the audit planning process, the Director, Water Supply, Works & Emergency Services, advised us that the Ontario Ministry of the Environment (MOE) had recently completed detailed inspections at the City’s four water treatment plants. These inspections were conducted to ensure compliance with the new “Drinking Water Protection Regulation”, which came into effect in August 2000 in response to the Walkerton tragedy. Consequently, it was determined that any detailed work that we would perform would effectively duplicate work already performed by the MOE. However, in order to satisfy ourselves that there were no issues of consequence with the quality assurance processes, we reviewed and discussed the inspection reports issued by the Ministry of the Environment with relevant staff of the Works & Emergency Services Department and Toronto Public Health.

Comments:

Legislative and Regulatory Requirements

Under the Constitution Act, the provinces, territories and the federal government share responsibility for water. However, the provinces own water resources, including both surface and groundwater and thus are responsible for the provision of drinking water.

A Federal-Provincial Subcommittee on Drinking Water has developed Canadian drinking water guidelines that are recognized as the standard of water quality throughout Canada. These guidelines apply to drinking water from all private and municipal water sources and are set out in a publication called “Guidelines for Canadian Drinking Water Quality” published by Health Canada. Based on a risk assessment process, the guidelines contain limits for acceptable levels of contaminants (called microbiological, chemical, physical and radiological parameters). All provinces and territories have developed their own measures of water quality based on the federal guidelines.

In Ontario, the Ontario Water Resources Act is the legislation that governs potable water. The Act prohibits the pollution of water, requires provincial approval of waterworks (the collection, production, treatment, storage, supply and distribution of water) and sewage works and governs the “taking” of water and construction of wells. The Ministry of the Environment has the responsibility to administer this Act. The local Medical Officers of Health, through the Health Protection and Promotion Act (Chapter 10, Part 3, sections 10,11,12, 13) have the responsibility and authority to judge whether water is safe for human consumption.

Ontario Regulation 435/93 requires that waterworks be classified by type of facility and that persons operating waterworks be classified and licensed according to the classification held by the waterworks.
Impact of the Walkerton Tragedy

In May and June 2000, several people died and hundreds became ill in Walkerton, Ontario, from contamination of the water supply by E. Coli bacteria and other pathogens. Subsequently, on June 12, 2000, the Province of Ontario established an independent commission, called the Walkerton Inquiry. The Inquiry’s mandate is “to inquire into the cause of these events including the effect, if any, of government policies, procedures and practices and to make recommendations to ensure the safety of the drinking water in Ontario.” The Inquiry will conclude sometime in 2001 and will report its findings, conclusions and recommendations to the Attorney General of Ontario, who, in turn, will make them public.

In August 2000, the Province of Ontario introduced a new “Drinking Water Protection Regulation” to ensure the safety of Ontario’s drinking water. The new regulation becomes part of the Ontario Water Resources Act and puts into law the “Ontario Drinking Water Standards” (formerly the Ontario Drinking Water Objectives). The Regulation applies to large waterworks in the Province.

The main features of the new Regulation, which came into effect on August 26, 2000, are as follows:

Owners/operators of large waterworks must:

- meet minimum treatment requirements (disinfection and treatment to destroy disease-causing organisms);
- conduct mandatory sampling and testing of drinking water and only by accredited laboratories or licensed staff;
- immediately notify the proper authorities of adverse test results (Medical Officer of Health and Ministry of the Environment);
- post notice signs to alert the public where water is untested or unsafe; and
- provide quarterly reports to consumers describing the operation of the waterworks and the quality of the drinking water. First report was due October 30, 2000 for the period July 1, 2000 to September 30, 2000 and the second report for the period October 1, 2000 to December 31, 2000 was due on January 31, 2001. (The City of Toronto met these deadlines and this information is available on the City’s website).

Further, the regulation requires that independent assessments of each water treatment plant be carried out to verify compliance with the Regulation and to identify improvements required to meet specified standards. An independent Engineer’s Report for each Toronto Water Supply facility will be submitted to the Ministry of the Environment by May 31, 2001.
Internal Water Quality Reports

The City of Toronto’s Water and Wastewater Services Division has produced several reports that describe the water treatment process and quality assurance process that ensure the safety of the City’s water. For example, a report dated April 14, 1999 “Water Treatment Process and Water Quality Analyses”, submitted to the Works and Utilities Committee, concludes that “the City maintains a comprehensive water quality program, which in terms of scope and frequency, surpasses regulatory requirements by a wide margin”. A summary of chemical analyses of water samples attached to this report supports this statement. Similarly, the water test results, published in recent quarterly reports to consumers, indicate that the City’s water continues to exceed standards set by the provincial and federal government.

Ministry of the Environment Inspections

In response to the Walkerton tragedy, the Ministry of the Environment implemented a plan to inspect every municipal waterworks in Ontario to ensure that the province’s standards for drinking water quality were being met. Consequently, between September and November 2000, staff from the Ministry of the Environment’s Sewage and Water Inspection Program (SWIP) inspected all four of Toronto’s water treatment plants. These inspections are now conducted annually. Prior to the Walkerton tragedy, the Province conducted inspections on a less frequent basis.

The SWIP inspection guidelines state that “the purpose of the enhanced compliance inspection plan is to confirm drinking water facilities’ compliance with MOE legislation and control documents, and conformance with MOE drinking water-related policy. Specifically, this includes compliance/conformance with:

- Certificates of Approval
- Permits to Take Water
- Orders
- Operators certification requirements
- MOE guidelines for minimum treatment
- Ontario Drinking Water Objectives, including minimum sampling requirements and maximum acceptable concentrations (MACs) or interim maximum acceptable concentrations (IMACs).”

MACs and IMACs are standards established for contaminants with health-related effects.

Water samples were taken during the inspections and tested at the Ministry of the Environment central laboratory.

A drinking water facility is given a “fail” following an inspection “if there is any violation…where there is resulting known or anticipated human health impact.” Therefore, a “fail” inspection rating would result if:
the sampling frequency was not met for health parameters;

- there was non-compliance with treatment requirements (includes disinfection of water through chlorination); and

- the sampling results indicated that health parameter(s) exceeded the “Ontario Drinking Water Standards” and appropriate action was not taken and/or notification requirements not followed.

All four of the City’s water treatment plants “passed” the Ministry of the Environment inspections. On the day of the inspections, the plants were in compliance “with the minimum level of treatment”, “sampling requirements” and “water quality requirements” for health related parameters. In fact, the MOE inspection reports indicated that the City’s sampling frequency for health-related contaminants either met or exceeded the requirements of the new “Ontario Drinking Water Protection Regulation”.

Toronto Public Health’s Role

The local Medical Officer of Health, under the legislation of the Health Promotion and Protection Act, makes the “ultimate judgement regarding human health issues and the safety of drinking water”. In meetings with Works & Emergency Services and Toronto Public Health staff, we were advised that Toronto Public Health receives a weekly report of water sample results from the Works & Emergency Services Department. In addition, in accordance with the Drinking Water Protection Regulation, a notification protocol is in place whereby Toronto Public Health is immediately notified of all adverse drinking water results and the corrective action being taken.

We also requested that the “Safe Water Lead” at Toronto Public Health, provide us with his judgement regarding the safety of Toronto’s drinking water, based on recent inspections conducted by the Ministry of the Environment and the ongoing water sample results provided by the Works & Emergency Services Department. Specifically, we asked whether there were any possible health related risks associated with water from the City of Toronto’s four water treatment plants. We were informed that in his judgement based on Ministry of the Environment Inspection Reports and ongoing water sample results provided by Works & Emergency Services that “there are no health-related risks associated with water from the City of Toronto’s four water treatment plants”.

As recommended by Audit Services, Toronto Public Health requested that the Ministry of the Environment forward copies of all future inspection reports and information “as to the frequency of future inspections” to Toronto Public Health. In addition, Toronto Public Health asked that they “be apprised of any and all required corrective actions, timelines and/or work plans resulting from issues identified in Ministry of Environment and Engineering Reports of Water Treatment Facilities in the City of Toronto.”
Conclusions:

Our 2000 Audit work plan, which was approved by Audit Committee in March 2000, included an environmental audit on Water Quality. We had selected the audit on Water Quality based on our risk assessment process. At that time, however, we could not anticipate the impact of the new “Drinking Water Protection Regulation” or the more frequent water treatment inspection process that was introduced by the Province in response to the Walkerton tragedy.

The new regulation requires mandatory testing and treatment of drinking water and new reporting and notification procedures. As a result of enhanced water quality inspection procedures conducted by the MOE, there was no value in Audit Services essentially duplicating work already performed by the Ministry. Rather, we relied on the work completed by the MOE and performed a high level review of the processes that exist within the City relating to water quality.

Based on discussions with Toronto Public Health and Works & Emergency Services staff, quality assurance processes are in place within the City, that ensure the safety of the City’s water. The recent provincial regulation prompted by the Walkerton tragedy has further strengthened the overall quality assurance process.

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