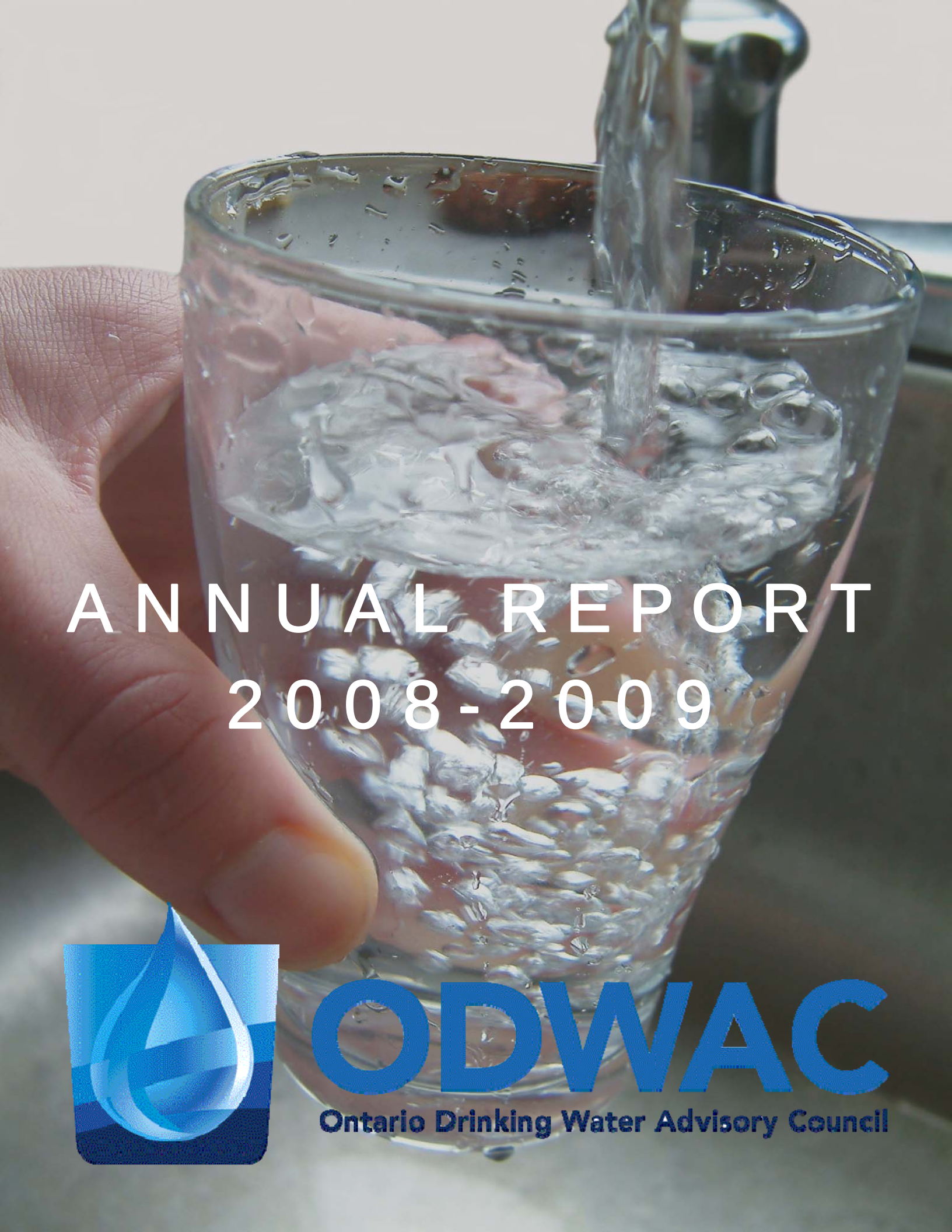
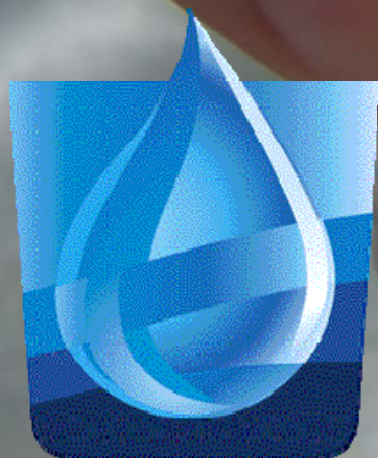


A close-up photograph of a hand holding a clear glass. Water is being poured from a faucet into the glass, creating a dynamic splash and many bubbles. The background is a neutral, light-colored surface.

ANNUAL REPORT 2008-2009



ODWAC

Ontario Drinking Water Advisory Council



“Advising Ontario on Drinking Water Quality”

www.odwac.gov.on.ca

The Ontario Drinking Water Advisory Council, known formally as the Advisory Council on Drinking Water Quality and Testing Standards, is an Agency of the Government of Ontario

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1.0 Message from the Chair

On behalf of the Advisory Council on Drinking Water Quality and Testing Standards, I am pleased to present this fifth annual report outlining our activities and achievements from May, 2008 to May, 2009.

The Council's overall mandate is to provide the Minister of the Environment with advice on a variety of matters related to drinking water in Ontario. The Council consists of a group of drinking water professionals with the sincerest interest in protecting and improving the safety and quality of this province's drinking water. They bring their collective knowledge and experience to the table to reach consensus on drinking water matters, formulate advice, and provide concrete solutions.

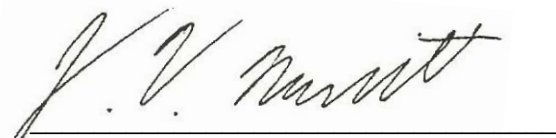
This past year, the Council continued its work on a request from the Minister of the Environment to review the current Ontario Drinking Water Quality Standard for tritium, and is anticipating the completion of its work later in 2009.

The Council also hosted a symposium on alternative approaches to drinking water disinfection with the objective of becoming better informed about practices in other countries, particularly those with less reliance on chlorine than Ontario. An ensuing expert panel session was held with the goal of developing possible recommendations for the province, in order to consider a process to allow for alternative approaches to disinfection, particularly for distributed water.

The Council also addressed a number of drinking water issues and standards resulting in advice to the Minister of the Environment. As well, consideration was given to several Canadian Drinking Water Quality Guidelines for inclusion or update as Standards in Ontario.

The Council continued to monitor Ontario's overall drinking water framework and has kept abreast of new developments in other jurisdictions, in order to provide the Minister of the Environment with the most current advice possible.

I would like to thank the members for taking time from their busy schedules to contribute to and support the work of the Council. I would also like to thank the staff of the Ministry of the Environment and the Ministry of Health and Long-Term Care for their continued support of the Council's mandate.



Jim Merritt

2.0 Council Background and Mandate

On May 23, 2002, Justice O'Connor, in the *Part Two Report of the Walkerton Inquiry*, made six recommendations regarding an "Advisory Council on Standards". Specifically, Recommendation 25 states that "*In setting drinking water standards for Ontario, the Minister of the Environment should be advised by an Advisory Council on Standards*".

In recommending an Advisory Council on Standards, Justice O'Connor also noted that:

- It is reasonable to seek expertise from an Advisory Council on standards comprised of members of the broader general public; as such expertise may not reside in the Ministry of the Environment.
- The benefits of an Advisory Council on Standards include transparency in process and increased public participation.
- The Advisory Council on Standards should establish its own process.
- Recommendations made to the Minister of the Environment should be made public and should be supported by the Advisory Council on Standards' rationale.
- The Advisory Council on Standards should also advise the Minister of the Environment with respect to management, treatment, testing, materials, and reporting standards.

On May 12, 2004, The Minister of the Environment announced the establishment of the Ontario Drinking Water Advisory Council (Council), known formally as the "Advisory Council on Drinking-Water Quality and Testing Standards" in the *Safe Drinking Water Act, 2002*.

Enabled under Section 4 of the *Safe Drinking Water Act, 2002*, the Council is "*to consider issues relating to standards for drinking-water quality and testing and to make recommendations to the Minister*" of the Environment, which are to be "*taken into consideration in establishing and revising standards under this Act for drinking-water quality and testing.*" (See Appendix B for the relevant sections of the *Safe Drinking Water Act, 2002*)

The Minister of the Environment appointed members from key professional fields representing a cross-section of academia, industry and municipalities, with expertise in the areas of microbiology, toxicology, risk assessment, engineering, utility operations, public health, and others with a record of interest and accomplishment related to drinking water. They are all active in their areas of knowledge and bring their current and direct experience to the Council's deliberations. (See Appendix F for the Council Members' Biographies)

The broad mandate of the Council is to provide advice and make recommendations to the Minister of the Environment on drinking water quality and testing standards, as well as other drinking water matters deemed appropriate. The role of the Council includes, but is not necessarily limited to, the following core activities:

- **Requests from the Minister of the Environment:**
Providing advice on drinking water policies, practices, procedures, standards, testing methods, and related research, as requested by the Minister of the Environment.
(See Section 4.0)
- **Standards Review:**
Reviewing research, scientific, and technical documentation related to drinking water quality and testing standards, including Federal-Provincial-Territorial priorities, in order to provide advice to the Minister of the Environment on standards and their applicability in Ontario.
(See Section 5.0)
- **Council Initiatives:**
Providing recommendations on drinking water matters that the Council has become aware of and has identified as being of interest, and which may merit the attention of the Minister of the Environment.
(See Section 6.0)
- **Stakeholder / General Public Consultations:**
Publishing information on the Environmental Registry and undertaking additional consultations on standards, regulations, or other drinking water matters, to solicit views from stakeholders or the general public, in order to provide advice and recommendations to the Minister of the Environment.
(See Section 7.0)

3.0 Summary of Activities and Accomplishments

Following is a summary of the Council's activities and accomplishments from May, 2008 to May, 2009, as well as progress on items reported on in previous annual report years:

Requests from the Minister of the Environment: *(See Section 4.0)*

Progress on Requests from Previous Years:

- Small Drinking Water Systems Program
- Ontario Regulation 903 (Wells) Disinfection Requirement
- Corrosion Control / Lead Reduction
- Tritium Standard

Standards Review: *(See Section 5.0)*

Progress on Standards Reviews from Previous Years:

- Arsenic
- Total Trihalomethanes and Bromodichloromethane
- Chlorite and Chlorate

Standards Reviews Completed:

- Total Haloacetic Acids (HAA₅)
- Chloral Hydrate
- Potassium

Standards Currently Under Review:

- Benzene
- Chlorine
- Radiological Characteristics
- Tritium *(Also See Section 4.1)*

Standards Prioritization: *(See Section 5.4)*

Council Initiatives: *(See Section 6.0)*

Progress on Initiatives from Previous Years:

- Clean Water Act (Bill 43)
- Drinking Water Quality Management Standard
- Ontario Regulation 248 (Drinking-Water Testing Services)

Initiatives Currently Under Review:

- Alternative Approaches to Drinking Water Disinfection *(Also See Section 7.1)*
- Use of Surrogates as Indicators

Areas of Ongoing Interest:

- Climate Change
- Dual / Reclaimed Water Systems
- Infrastructure Protection for Municipal Drinking Water
- Nano-Technology
- Ontario First Nations Drinking Water Quality
- Ontario's Overall Drinking Water Framework
- Part Two Report of the Walkerton Inquiry Recommendations
- Pharmaceuticals and Personal Care Products
- Promoting Municipal Drinking Water
- Quantitative Microbiological Risk Assessment
- Small Systems Treatment Equipment

Stakeholder / General Public Consultations: *(See Section 7.0)*

- Alternative Approaches to Drinking Water Disinfection Symposium
(Also See Section 6.2)

4.0 Requests from the Minister of the Environment

The Minister of the Environment can formally request the Council to provide direct advice and make recommendations on drinking water policies, practices, procedures, standards, testing methods, and related research.

The following requests were referred to the Council by the Minister in a previous annual report year, but there was additional activity and progress made during this reporting period:

4.1 Progress on Requests from Previous Years

Small Drinking Water Systems Program

On June 30, 2004, the Minister of the Environment asked the Council to provide advice on the Drinking-Water Systems Regulation (Regulation 170) with respect to the appropriateness of requirements for small systems, and particularly private ones, keeping in mind the province's commitment to implement all of the Walkerton recommendations.

After careful review of Regulation 170 as it applied to smaller, private systems, the Council concluded that regulatory amendments alone would not remedy the situation. To this end, on February 8, 2005, the Council submitted its report to the Minister of the Environment, recommending, among many things, that a new regulation be put in place, to empower Public Health Units to administer safe drinking water programs for these smaller systems.

The report, entitled "Report and Advice on Ontario Regulation 170/03 Smaller, Private Systems Review and Recommendations" can be found at:

http://www.odwac.gov.on.ca/reg_170/020805_Reg_170_Final_Report.pdf.

Effective December 1, 2008, small drinking water systems were transferred from the Ministry of the Environment (O. Reg. 252/05 made under the *Safe Drinking Water Act, 2002*) to the Ministry of Health and Long-Term Care (MOHLTC). These systems are now governed by two new regulations under the *Health Protection and Promotion Act, R.S.O. 1990*:

- Ontario Regulation 318/08 (Transitional - Small Drinking Water Systems) and;
- Ontario Regulation 319/08 (Small Drinking Water Systems).

This new Small Drinking Water Systems program is administered by local boards of health. Public health inspectors (PHI) are conducting site-specific risk assessments for every small drinking water system in the province, under the *transitional* Ontario Regulation 318/08. Based on the assessments, they will determine what owners and operators must do to keep their drinking water safe, and will issue a directive for each system, at which point the system will become subject to the requirements of the *permanent* Ontario Regulation 319/08.

The directive may include requirements for water testing, treatment options or training, reflecting a unique approach for each system depending on the level of risk, as was recommended by the Council.

The Council continues to monitor the Small Drinking Water Systems Program, including the development and implementation of tools for use by Ministry of Health and Long-Term Care and the public health units.

As well, the Chair of the Council participates in a small systems working group, as organized by the Federal / Provincial / Territorial Committee on Drinking Water. The working group is focused on risk assessment and technology for small systems.

Ontario Regulation 903 (Wells) Disinfection Requirement

On July 25, 2007, Ontario Regulation 903 was updated and the amendments came into effect on December 31, 2007. As well, the Ministry of the Environment is currently developing Best Practices Manuals for the regulated community.

The amended Regulation adopted the Council's recommendations for disinfection with regards to dosage, contact time, pumping out, and verification of free chlorine residuals, and applies to drinking water wells following initial construction, alterations and pump installation.

The Council continues to monitor any future regulatory amendments or guidance documentation development for Ontario Regulation 903.

Corrosion Control / Lead Reduction

On April 24, 2007, the Minister of the Environment requested that the Council undertake a review of the Health Canada's "*Corrosion Control in Drinking Water Distribution Systems*" Document, with a view towards early implementation of corrosion control in Ontario to reduce lead at consumers' taps, as well as comments that Ontario could provide to the Federal Government.

On May 31, 2007, the Council transmitted its initial advice the Minister of the Environment on corrosion control measures that could be implemented immediately in Ontario to reduce lead at consumers' taps.

On June 7, 2007, the Ontario government announced its lead action plan to expand water safety protection and reduce the potential for elevated levels of lead in drinking water at the tap. The action plan, which went into effect on July 26, 2007, addressed many of the Council's recommendations, and included:

- amending Ontario Regulation 170/03 (Drinking Water Systems), making it mandatory for municipalities and non-municipal year round residential systems to: regularly sample for lead at household taps, notify home and facility owners of the results, and take corrective action in systems with elevated lead levels;
- establishing a new regulation, Ontario Regulation 243/07 (Schools, Private Schools, and Day Nurseries), requiring schools and daycares built before 1990 to flush plumbing on a daily basis, and requiring all schools, as well as daycares built before 1990, to test drinking water for lead annually;
- assisting low-income families with infants, young children or pregnant women with the cost of filters where they are recommended;
- providing expert advice to municipalities to adjust water chemistry in municipal systems to reduce the uptake of lead;
- encouraging municipalities to conduct public education campaigns, such as inserts in water bill mailings; and
- providing best practices for municipalities to help make lead line replacement more affordable for homeowners.

Reports of lead test results for the first two rounds of samples taken under the new regulatory requirements are available on the Ministry of the Environment website at:

www.ontario.ca/drinkingwater.

The Council continues to monitor Ontario's Lead Action Plan in terms of any future regulatory amendments or guidance documentation development.

Tritium Standard

On February 21, 2007, the Minister of the Environment formally requested that the Council review and provide advice on the current Ontario Drinking Water Quality Standard (ODWQS) for tritium, taking into consideration recommendations made in the 1994 report entitled: "A Standard for Tritium" transmitted to the Minister of Environment and Energy by the Ontario Advisory Committee on Environmental Standards (ACES), which no longer exists.

The Minister noted in the request that the issue had been raised by the Medical Officer of Health for the City of Toronto, in relation to a City of Toronto Council Resolution adopted on June 27, 28 and 29, 2006.

On June 21, 2007, the Minister made an additional request for the Council to also take into consideration a report, authored by Dr. Ian Fairlie entitled “Tritium Hazards Report: Pollution and Radiation Risks from Canadian Nuclear Facilities”, prepared for Greenpeace Canada.

In undertaking its review, the Council established a working group to assist the Council as a whole. A multi-step approach was developed and is currently being executed by:

1. Obtaining all pertinent documentation for review
2. Undertaking an inter-jurisdictional comparison
3. Meeting with key stakeholder groups and individuals
4. Holding a public consultation to hear directly from interested parties (March 26 and 27, 2008)
5. Developing recommendations for the full Council’s consensus

Results from the public consultation will be incorporated with the input received from individuals and other stakeholders to inform the Council’s advice to the Minister of the Environment on the Ontario Drinking Water Quality Standard for tritium.

All of the dissertations and written submissions from the public consultation are available on the Council’s website at:

http://www.odwac.gov.on.ca/standards_review/tritium/tritium_consultation.htm.

It is intended that the preliminary conclusions reached by the working group are to be presented to the full Council for discussion and subsequent consensus on a proposed Standard and a number of measures related to implementation. The Council is anticipating the completion of its work later in 2009.

5.0 Standards Review

Part of the Council's mandate is to provide advice to the Minister of the Environment on proposed drinking water standards, objectives, and guidelines and their applicability in Ontario. Recommendation 25 of the *Part Two Report of the Walkerton Inquiry*, states that "*In setting drinking water standards for Ontario, the Minister of the Environment should be advised by an Advisory Council on Standards*".

In order to provide comprehensive advice, the Council assesses Health Canada's Guideline Technical Documents, comments from the national and Ontario public consultation processes, and information on the occurrence and impact that a particular substance is likely to have on the delivery of safe drinking water in the province.

Based on this assessment, the Council may recommend the endorsement of a Canadian Drinking Water Quality Guideline (CDWQG) as an Ontario Drinking Water Quality Standard (ODWQS) in Ontario Regulation 169/03, or as an Objective, or Guideline, or it may make an alternative recommendation. When appropriate, the Council may also conduct independent consultations with stakeholders and technical experts as deemed necessary to formulate its advice.

It should be noted that the Council's protocol is to recommend that all Ontario Standards, Objectives, and Guidelines be at least as stringent, if not more stringent, than the corresponding CDWQGs. (*See Appendix C for the Council's Standards Review Protocol*)

Following is an update of the status of the Council's review of standards, from May, 2008 to May, 2009, as well as progress on standards reported in previous annual report years:

5.1 Progress on Standards Reviews from Previous Years

Arsenic

The Council completed its review of Health Canada's "Arsenic in Drinking Water" Document for Public Comment, which underwent public consultation in Ontario from November 30, 2004 to May 17, 2005. On May 30, 2006, a final revised Canadian Drinking Water Quality Guideline for arsenic was posted on Health Canada's website.

On April 28, 2006, the Council transmitted its advice on arsenic to the Minister of the Environment, recommending that the Ministry of the Environment endorse the revised Canadian Drinking Water Quality Guideline of 10 µg/L and adopt it as an Ontario Drinking Water Quality Standard.

Total Trihalomethanes and Bromodichloromethane

On November 30, 2005, the Council transmitted its advice on total trihalomethanes and bromodichloromethane to the Minister of the Environment.

On April 7, 2006, the Ministry of the Environment posted a Regulation Proposal Notice on the Environmental Registry for public comment, in order to seek feedback on the adoption of a more stringent Ontario Drinking Water Quality Standard of 0.08 mg/L for total trihalomethanes, with a phase-in period.

The Council discussed Health Canada's December, 2008 removal of a separate bromodichloromethane Guideline value from the total trihalomethanes Guideline, recognizing that new research indicated that the maximum acceptable concentration for total trihalomethanes is protective of the health effects of all total trihalomethanes, including bromodichloromethane. The Council agreed with Health Canada's rationale and deemed it unnecessary to propose an Ontario Drinking Water Quality Standard for bromodichloromethane.

The Ministry of the Environment also continues to address stakeholder comments and is currently developing guidance documentation to aid small systems in reducing their total trihalomethanes.

Chlorite and Chlorate

On August 23, 2007, the Council transmitted its advice to the Minister of the Environment, recommending that the Ministry of the Environment endorse the new Canadian Drinking Water Quality Guidelines of 1 mg/L for chlorite and 1 mg/L for chlorate in drinking water, and adopt them as Ontario Drinking Water Quality Standards in Ontario Regulation 169 (Ontario Drinking-Water Quality Standards).

5.2 Standards Reviews Completed

Total Haloacetic Acids (HAA₅)

The Council assessed Health Canada's "Haloacetic Acids in Drinking Water Document for Public Comment" as well as the finalized "Guideline Technical Document" for total haloacetic acids, which set a new Canadian Drinking Water Quality Guideline for total haloacetic acids (HAA₅) in drinking water at maximum acceptable concentration (MAC) of 80 µg/L.

On July 29, 2008, the Council transmitted its advice to the Minister of the Environment, recommending that the Ministry of the Environment set a more stringent Ontario Drinking Water Quality Standard of 60 µg/L for total haloacetic acids (HAA₅) in drinking water. *See Appendix A.*

Chloral Hydrate

The Council assessed Health Canada's "Guidance on Chloral Hydrate in Drinking Water" for its applicability in Ontario. Based on this assessment, the Council may recommend the endorsement of a Canadian Drinking Water Quality Guideline as an Ontario Drinking Water Quality Standard in Ontario Regulation 169/03, or as an Objective, or Guideline, or it may make an alternative recommendation.

In the case of chloral hydrate, the Council agreed with the approach taken by Health Canada in its Guidance Document, in that no Guideline value was deemed necessary. It was further agreed that there is no need for an Ontario Drinking Water Quality Standard and no further action is required by the Council or the province on chloral hydrate.

Potassium

The Council assessed Health Canada's "Guidance on Potassium from Water Softeners" for its applicability in Ontario. Based on this assessment, the Council may recommend the endorsement of a Canadian Drinking Water Quality Guideline as an Ontario Drinking Water Quality Standard in Ontario Regulation 169/03, or as an Objective, or Guideline, or it may make an alternative recommendation.

In the case of potassium, where the primary source for drinking water is from household water softeners, the Council agreed with the approach taken by Health Canada in its Guidance Document, in that no Guideline value was deemed necessary. It was further agreed that there is no need for an Ontario Drinking Water Quality Standard and no further action is required by the Council or the province on potassium from water softeners.

5.3 Standards Currently Under Review

The following standards are still under review by the Council. The Council will continue to assess these contaminants and will provide formal advice to the Minister of the Environment in an appropriate and timely fashion. The standards include:

- benzene
- chlorine
- radiological characteristics
- tritium (*Also see Section 4.1*)

5.4 Standards Prioritization

Part of the Council's mandate is to provide advice and make recommendations on matters relating to the prioritization of the review and development of standards for drinking water quality in Ontario.

In addition, the *Part Two Report of the Walkerton Inquiry* noted in Recommendation 26, that *"The Advisory Council on Standards should have the authority to recommend that the provincial government adopt standards for contaminants that are not on the current federal-provincial agenda."*

Specifically, in establishing its own process, the Council has chosen to review, on a yearly basis, the list of priority substances as developed by the Federal-Provincial-Territorial (FPT) Committee on Drinking Water (CDW).

The purpose of this review is to recommend the addition of substances for Ontario to put forward, that may not be on the current National Priority List, and / or to recommend the bumping-up of existing substances as deemed important for the province. For the May, 2008 to May, 2009 Council year, a review was completed and the Council concurred with the National Priority List.

6.0 Council Initiatives

While the Minister of the Environment can request that the Council provide advice on specific matters related to drinking water, the Council can also choose to engage in drinking water matters, which it has identified as being of interest, and which, in its opinion, may merit the attention of the Minister of the Environment.

The process by which the Council engages in its initiatives is as follows:

- Initiatives are identified through the Council's priority-setting process.
- The Council decides whether or not to form a working group to facilitate tasks, based on the complexity of the initiative.
- The Council or working group then decides how to best approach each initiative using any or all of the following means, including:
 - inviting a Ministry of the Environment expert make a presentation to the Council
 - inviting an external expert make a presentation to the Council
 - carrying out a literature search
 - holding a stakeholder and / or experts workshop and / or symposium
 - facilitating a research project
- The conclusions and suggested recommendations are deliberated by the full Council, and advice is developed and transmitted to the Minister of the Environment, in cases where it is deemed to merit some attention and / or action.

Even though advice may have already been transmitted in some cases, many of these initiatives are of an on-going nature. As such, the Council remains engaged from the perspective of reviewing the development of legislative, regulatory and policy amendments, in order to provide on-going advice to the Minister of the Environment. Following is a brief outline of the initiatives that the Council was engaged in from May, 2008 to May, 2009:

6.1 Progress on Initiatives from Previous Years

The Council transmitted advice on the following initiatives to the Minister of the Environment in previous annual report years. Progress, however, was made during this annual reporting period, and is summarized below:

Clean Water Act (Bill 43)

On June 20, 2008, Ontario Regulation 286/07 – Miscellaneous, made under the *Clean Water Act, 2006* was amended to prescribe training requirements for power of property entry, and the application requirements and decision-making authority for the Ontario Drinking Water Stewardship Program, and financial assistance details.

Also on June 20, 2008 the Ministry of the Environment posted, on the Environmental Registry, Regulation Proposal Notices for the proposed Definitions of Words and Expressions Used in the Act Regulation and the Assessment Reports Regulation, as well as a Policy Proposal Notice for Technical rules proposed to be made under the *Clean Water Act, 2006* to establish requirements related to the preparation of an assessment report.

On November 6, 2008, the Ministry of the Environment posted, on the Environmental Registry, a Policy Decision Notice for Technical rules proposed to be made under the *Clean Water Act, 2006* to establish requirements related to the preparation of an assessment report.

Then on November 20, 2008 the Ministry of the Environment posted Regulation Decision Notices on the Environmental Registry for the proposed Definitions of Words and Expressions Used in the Act Regulation and the Assessment Reports Regulation.

Over this annual report period, the Council met with Ministry of the Environment staff and continues to monitor the new and proposed Regulations and guidance documentation.

Drinking Water Quality Management Standard

As reported in the 2007-2008 Annual Report, the Council undertook a review of the draft Drinking Water Quality Management Standard (DWQMS), and transmitted its advice to the Minister of the Environment on March 31, 2006.

On October 30, 2006, the Ministry of the Environment posted a Policy Decision Notice on the Environmental Registry, finalizing the DWQMS, which took into account many of the Council's recommendations. Decision Notices for the DWQMS Guidance Document, Director's Directions and Accreditation Protocol were also posted on the Environmental Registry on July 31, 2007.

In May, 2007, Ontario Regulation 188/07, the Licensing of Municipal Drinking-Water Systems Regulation, came into force, requiring owners to submit an operational plan and apply for a licence and a Drinking Water Works Permit to the Ministry of the Environment, starting January 1, 2009. As a postscript, on June 3, 2009 the first municipality received its licence.

Guides for applying for a licence and a Drinking Water Works Permit, as well as additional documents were posted on the Drinking Water Ontario website at www.ontario.ca/drinkingwater.

The Council continues to monitor the progress of the implementation of the Drinking Water Quality Monitoring Standard in terms of any future regulatory amendments or guidance documentation development.

Ontario Regulation 248 (Drinking-Water Testing Services)

As reported in the 2007-2008 Annual Report, the Council transmitted its advice on Ontario Regulation 248/03 (Drinking-Water Testing Services) to the Minister of the Environment on January 3, 2006. Although the Council's advice was primarily focused on Recommendations 40 and 41 of the *Part Two Report of the Walkerton Inquiry* Recommendations, it was not limited to these two recommendations. (See Appendix A1)

The Ministry of the Environment continues to evaluate new technologies for microbiology tests on an ongoing basis, to determine their suitability for use.

The Council met with Ministry of the Environment staff and continues to monitor the progress of its advice on Ontario Regulation 248/03, in terms of any future regulatory amendments or guidance documentation development.

6.2 Initiatives Currently Under Review

The Council continues to be actively engaged in the following initiatives with a view towards potentially providing advice to the Minister of the Environment in the future:

Alternative Approaches to Drinking Water Disinfection

The Council had become aware that some jurisdictions other than Ontario have quite different approaches to both primary and secondary disinfection (the practice of maintaining a *chlorine* residual in the distribution system). In some other jurisdictions, much less reliance is placed on chemical disinfection, and particularly in the use of chlorine, than is the case in much of North America.

Given its role of providing advice to the Minister of the Environment, it was considered desirable for the Council to become better informed on this matter. To this end, the Council held a symposium on September 22, 2008 to hear from experts in other jurisdictions. (*See Section 7.1*)

An ensuing expert panel session was held on September 23, 2008, comprised of the experts and several Council members, with the goal of developing possible recommendations for the province so that it may be in a position to consider a process to allow for alternative approaches to disinfection, particularly for distributed water.

The Council continues its research on alternative approaches to drinking water disinfection and will report on its findings, conclusions, and possible recommendations in the future.

Use of Surrogates as Indicators

The use of surrogates as indicators can indirectly identify the presence of other substances or groups of substances that are more difficult to measure and that may have greater health implications. Since Canadian Drinking Water Quality Guidelines are developed largely on a substance-specific basis, the synergistic effect of mixtures is not well known.

Therefore, the Council continues to evaluate the use and effect of surrogates on the development of guidelines and standards, as well as additional research needs.

6.3 Areas of Ongoing Interest

The Council continued to monitor the following on-going areas of interest with a view towards providing advice to the Minister of the Environment, if deemed appropriate, in the future:

- Climate Change;
- Dual / Reclaimed Water Systems;
- Infrastructure Protection for Municipal Drinking Water;
- Nano-Technology;
- Ontario First Nations Drinking Water Quality;
- Ontario's Overall Drinking Water Framework;
- Part Two Report of the Walkerton Inquiry Recommendations;
- Pharmaceuticals and Personal Care Products;
- Promoting Municipal Drinking Water;
- Quantitative Microbiological Risk Assessment; and
- Small Systems Treatment Equipment.

7.0 Stakeholder / General Public Consultations

Besides the specific recommendations on an Advisory Council on Standards made by Justice O'Connor in the *Part Two Report of the Walkerton Inquiry*, the *Report* also noted that an additional facet of such a Council would include transparency in process and increased public participation.

As such, part of the mandate of the Council is to undertake additional consultations on standards, regulations, or other drinking water matters, to solicit views from stakeholders or the general public, in order to provide advice and recommendations to the Minister of the Environment.

7.1 *Alternative Approaches to Drinking Water Disinfection Symposium*

On September 22, 2008 the Council held a symposium on alternative approaches to drinking water disinfection. The objective of the symposium was to allow the Council members, along with a broadly representative invited audience, to learn first-hand about practices in other countries, notably those where there is less reliance on chlorine than in Ontario.

Presentations were made by speakers from Australia, Norway, Switzerland, The Netherlands, and The United States of America, representing a wide range of disinfection practices, with opportunities for questions and panel discussion. (*See Section 6.2*)

The Council continues its research on alternative approaches to drinking water disinfection and intends to report on the findings of the symposium in the future.

Appendix A - Advice on Total Haloacetic Acids

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July 29, 2008

The Honourable John Gerretsen
Minister of the Environment
135 St. Clair Avenue West, 12th Floor
Toronto, Ontario M4V 1P5

Dear Mr. Gerretsen:

Re: Adoption of the new Canadian Drinking Water Quality Guideline for Total Haloacetic Acids (HAA₅) as an Ontario Drinking Water Quality Standard

Part of the Ontario Drinking Water Advisory Council's mandate is to provide you with advice on proposed drinking water standards, objectives, or guidelines and their applicability in Ontario.

In order to provide comprehensive advice, the Council assesses Health Canada's Guideline Technical Documents, comments from the public consultation processes, and information on the occurrence and impact that a particular substance is likely to have on the delivery of safe drinking water in Ontario.

Based on this assessment, the Council may recommend the endorsement of a Canadian Drinking Water Quality Guideline as an Ontario Drinking Water Quality Standard in Ontario Regulation 169/03, or as an Objective, or Guideline, or it may make an alternative recommendation. The Council may also conduct independent consultations with stakeholders and technical experts as deemed necessary to formulate its advice.

Health Canada, through the Federal-Provincial-Territorial process has recently finalized a new Canadian Drinking Water Quality Guideline for total haloacetic acids (HAA₅) in drinking water, with a Maximum Acceptable Concentration (MAC) of 80 µg/L, noting that: *"utilities should make every effort to maintain concentrations as low as reasonably achievable (ALARA) without compromising the effectiveness of disinfection."*

The acronym HAA₅ is used to represent the sum of 5 haloacetic acids most commonly found in drinking water, which are: monochloroacetic acid (MCA), dichloroacetic acid (DCA), trichloroacetic acid (TCA), monobromoacetic acid (MBA), and dibromoacetic acid (DBA).

On July 27, 2006, the Council provided early advice on HAA₅ to former Minister of the Environment, the Honourable Laurel C. Broten, because some concerns were identified and it was felt that providing comments at an early stage would permit Ontario to bring these concerns to the attention of those involved in the national Guideline-setting process.

The main concerns identified in the July 27, 2006 letter are quoted below:

- *“In reviewing the Document for Public Comment for HAAs in drinking water, the Council noted that, from a health benefit perspective, the science supported a more stringent GCDWQ than is being proposed by Health Canada. This identified health level would be 0.01 mg/L, based on an “essentially negligible” cancer risk for Dichloroacetic Acid (which is a component of total HAAs for the purposes of the proposed GCDWQ).”*
- *“The national process is recommending a less stringent GCDWQ because it has concluded that the 0.01 mg/L level “cannot be achieved without compromising the effectiveness of disinfection.” The proposed GCDWQ uses a risk management approach, resulting from the application of a cost-benefit analysis, based on the capabilities of current treatment systems. The Council, however, feels that the Document does not make a strong enough case for the proposed GCDWQ to be based on the limits of current treatment methods.”*
- *“The council notes that the limited scope of the review of water treatment approaches and technology in the Document is not sufficient to conclude that the improvement of treatment approaches could not reduce HAA formation without compromising disinfection. For example, only 3 of approximately 240 citations in the Document concern treatment technologies to minimize HAA formation. The United States Environmental Protection Agency (USEPA) has published a lot of work in this area and, even though these documents may not necessarily serve as primary references, they should be considered in assessing treatment capabilities and limitations.”*
- *“The Council also noted that Dichloroacetic Acid may be present in a high enough concentration to constitute a possible health risk, without leading to an exceedance of the proposed GCDWQ.”*

Haloacetic acids, along with trihalomethanes (THMs), are the two major groups of disinfection by-products which are used as indicators of the presence of halogenated (primarily chlorinated) disinfection by-products in treated drinking water. It is expected that their control will reduce the levels of halogenated disinfection by-products and the corresponding risks to human health.

The Council was made aware of the impacts of implementing an Ontario Drinking Water Quality Standard for HAA₅, based on data reported from the Ministry of the Environment's Drinking Water Surveillance Program (DWSP) for systems with HAA₅ levels greater than 60 µg/L and 80 µg/L. The Council has found the DWSP data to be most useful to its deliberations on many occasions.

Based on a review of the DWSP data, many Ontario plants would be able to meet a more stringent value of 60 µg/L. As well, the United States Environmental Protection Agency (USEPA) has had a Maximum Contaminant Level (MCL) of 60 µg/L for HAA₅ for several years now.

The benefits of meeting a lower HAA₅ limit include promoting and encouraging the optimization of treatment processes, and best management practices, which the Council feels should be actively encouraged in Ontario.

The reduction of these indicators will have additional benefits in reducing the human health risk from halogenated (primarily chlorinated) disinfection by-products in drinking water. It has been noted that the Ministry of the Environment has contracted the development of a guidance document for the reduction of THMs and HAA₅ for use by Ontario's water treatment plants.

The Council, therefore, recommends that the Ministry of the Environment set a more stringent Ontario Drinking Water Quality Standard of 60 µg/L for total haloacetic acids (HAA₅) in drinking water

Based on the Council's analysis of the ratio of the levels of HAA₅ and dichloroacetic acid (dichloroacetic acid commonly constitutes 40-60% of the HAA₅ concentration), when HAA₅ levels exceed 60 µg/L, water treatment plant operators should also evaluate their dichloroacetic acid levels, as part of their corrective actions. If the dichloroacetic acid levels exceed 30 µg/L, then the treatment plant should be required to undertake an optimization study aimed at reducing the formation of HAA₅ by prescribing steps that can be applied to the treatment process.

In addition, the new HAA₅ Standard should be phased in as follows:

- Treatment plants undergoing significant expansions or significant upgrades should be designed to, at minimum, meet the new HAA₅ Standard without compromising disinfection effectiveness.
- All other treatment plants should, at minimum, meet the new HAA₅ Standard, without compromising disinfection effectiveness, within a period of 2 years from the date that the Standard is promulgated.

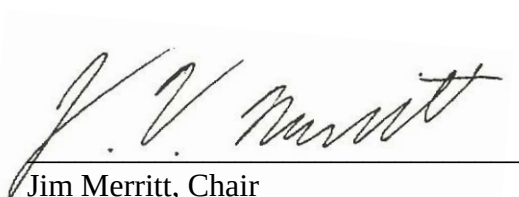
As well, the Council recommends that, during the phase-in period, systems that do not meet the new recommended 60 µg/L level for HAA₅, should not be required to report levels between 60 µg/L and 80 µg/L, as adverse results.

The Council also supports locational sampling, based on sites that are likely to produce the highest levels of HAA₅ in the distribution system. It is important to note that these locations may not necessarily be the same as those at which THMs are monitored. A good description of locational sampling to simultaneously address HAA₅ and other Disinfection By-Products is presented by the USEPA's *Stage 2 Disinfectants and Disinfection Byproducts Rule*.

The Council also agrees with the inclusion of a locational running annual average of a minimum of quarterly samples taken in the distribution system from locations that have historically had the highest HAA₅ levels, or, in the absence of historical data, the middle and extremities of the distribution system, for the sampling and reporting of HAA₅.

The Council feels that its recommendations on HAA₅ represent a precautionary approach to drinking water safety, enabling continuous improvement in the quality of drinking water for Ontarians.

Sincerely,

A handwritten signature in black ink, appearing to read "J. V. Merritt", is written over a horizontal line.

Jim Merritt, Chair
Advisory Council on Drinking Water
Quality and Testing Standards

Appendix B - Relevant Legislation

- ***Safe Drinking Water Act, 2002, Sections 4-5***

Advisory Council on Drinking-water Quality and Testing Standards

4. (1) The Minister shall establish an advisory body known in English as the “Advisory Council on Drinking-water Quality and Testing Standards” and in French as “Conseil consultatif sur les normes de qualité et d’analyse de l’eau potable” to consider issues relating to standards for drinking-water quality and testing and to make recommendations to the Minister. 2002, c. 32, s. 4 (1).

Appointment of members

(2) The members of the Advisory Council shall be appointed by the Minister. 2002, c. 32, s. 4 (2).

Notice

(3) The Advisory Council may publish information in the Registry. 2002, c. 32, s. 4 (3).

Consideration by Minister

5. The Minister shall ensure that all recommendations of the Advisory Council on Drinking-water Quality and Testing Standards are taken into consideration in establishing and revising standards under this Act for drinking-water quality and testing. 2002, c. 32, s. 5.

Appendix C - Council's Standards Review Protocol

The following summary table and detailed descriptions of the Council's Standards Review Protocol were developed to address and implement Recommendation #25 of the Part Two Report of the Walkerton Inquiry, which states that "*In setting drinking water quality standards for Ontario, the Minister of the Environment should be advised by an Advisory Council on Standards.*" The protocol focuses and guides the Council in providing timely advice to the Minister of the Environment on standards.

Summary Table

Federal Stage	MOE Stage	Council Stage				
				Issue	Input	Output
National Priority Setting	MOE Input into Priorities	1	a. Convey Substances of Interest to MOE (yearly)	Substances of Interest addressed	Proposed National Priority List	Conveyance of Substances of Interest to Minister of the Environment (<i>formal</i>)
			b. Review Final National Priority List	Substances of Interest NOT included on the list to be addressed by MOE	Final National Priority List	Conveyance of Substances of Interest NOT included on the list to Minister of the Environment (<i>formal</i>)
Scientific / Technical Review			No Council Involvement			
Guideline Technical Document	Review & Comment	2	a. Assess Guideline Technical Document	Concerns with document addressed	Draft Guideline Technical Document, decision sought, references, presentation	Information for formulation of advice on Ontario's position
National Public Consultation			b. Propose Interim Ontario Standard (<i>if warranted</i>) i. Undertake Independent Consultation (<i>if warranted</i>)			

Federal Stage	MOE Stage	Council Stage				
				Issue	Input	Output
Assess comments from National Public Consultation	Assess comments from National Public Consultation	3	Assess Comments from National Public Consultation	Concerns with national public comments addressed	Public comments from National consultation	Information for formulation of advice on Ontario's position
Draft Final Guideline Technical Document	Review & Comment	4	a. Assess Draft Final Guideline Technical Document b. Undertake Independent Consultation (if warranted) c. Determine and convey Position to MOE (informal)	Concerns with document addressed	Draft Final Guideline Technical Document; Presentation by MOE / HC expert	Conveyance of Council's advice to Ministry of the Environment and Minister's Office staff (informal)
	Convey Ontario's Position to CDW, CHE		No Council Involvement			
CDW, CHE Approval of Guideline Technical Document and Canadian Drinking Water Quality Guideline		5	Transmit Advice Letter to Minister (Proposed Ontario Standard, Objective, or Guideline, and operational advice, if necessary)	Ontario Concerns with final document addressed	Final Guideline Technical Document	Conveyance of Council's advice to Minister of the Environment (formal)
	Ontario public consultation via EBR Proposal		No Council Involvement			
	Assess EBR comments		No Council Involvement			
	Post EBR Decision		No Council Involvement			
	Revise Reg. 169, and / or other guidance documents as necessary		No Council Involvement			

Council Engagement Stage 1:

a. Convey Council's Substances of Interest to the MOE

The question before the Council at this sub-stage is:

Are there any substances of interest that are not already on the proposed National Priority List?

Priorities Considerations:

- Does the substance have an adverse health effect?
- Is the substance known or likely to occur at levels of concern?
- Would regulating the substance provide a meaningful opportunity for risk reduction?
- Would research of this substance (which could include collecting occurrence data, treatment data, health effects data, and developing analytical methods) constitute a good use of resources and funding?

Notes:

- Must account for emerging and emergency parameters (like NDMA)
- Can suggest re-ranking of parameters
- Minister may call on Council at any time for advice

Input: Ministry of the Environment Liaison staff member to supply the Council with the *proposed* National Priority List for review. Council members then identify substances of interest (that are not already on the list) and prepare for their discussion at the June meeting of every year.

Output: Council to submit a list of substances of interest to the Minister of the Environment to be considered for inclusion in Ontario's Standards Plan, and input into the Federal-Provincial-Territorial process.

b. Review Final National Priority List

The question before the Council at this sub-stage is:

Are there any substances that the Council recommended for inclusion on the National Priority List, that did not make the List, and, if so, what action should the Council take?

This sub-stage is directly linked to Recommendation #26 of the Part Two Report of the Walkerton Inquiry, which states that “*The Advisory Council on Standards should have the authority to recommend that the provincial government adopt standards for contaminants that are not on the current federal-provincial agenda.*”

Input: Ministry of the Environment Liaison staff member to supply the Council with the *final* National Priority List for review. Council members then review the National Priority List and identify the Council’s substances of interest that did not get included, if any. The Council will then prepare for discussion of these substances to decide what steps should be taken, including whether to advise the Ministry of the Environment to undertake their own standard review.

Output: Council to convey advice on next steps for the Substances of Interest (that did not get included in the Final National Priority List) to the Minister for the Ministry of the Environment to undertake its own scientific / technical review in consideration of the preparation of a document for public consultation.

Council Engagement Stage 2:

a. Assess Guideline Technical Comment

The question before the Council at this sub-stage is:

Does the Council have any concerns with the Guideline Technical Document?

The Council's role in this stage is to assess the Guideline Technical Document arising from the National Process, relying primarily on the knowledge and experience of its members, and possibly including such aspects as economic impacts, occurrence data, treatment data, and analytical methods, with consideration given to "Nice to Have" versus "Need to Have" information.

In the event that the above-mentioned aspects cannot easily be addressed, it may be determined that additional information or work is required. If so, the following process will be initiated, in consultation with the Ministry of the Environment's Standards Development Branch (SDB), to assist the review of the substance in question:

Process for Requesting Information from the Ministry:

- Consult with SDB Director and Ministry of the Environment Liaison staff member to clarify Council's request
- Consult with SDB. If deemed simple, requested information be supplied to Council through Ministry of the Environment Liaison staff member
- Consult with SDB. If deemed complex, Ministry of the Environment Liaison staff member to provide ideas on next steps to the Council
- If under \$25,000, Council could initiate and project-manage the research in cooperation with SDB
- If over \$25,000, Council to formally advise Minister of study / research need

Input: Guideline Technical Document, decision sought, scientific references, and a presentation by the Ministry (including information on the range of values and possible compromises made at the national level, and known and potential contentious issues), and *if required*, information per the above 5 step process for requesting information from the Minister or Ministry.

Output: Council to use information to develop advice for inclusion in the analysis and formulation of Ontario's position.

b. Propose Interim Ontario Standard (If warranted)

The question before the Council at this sub-stage is:

Does Ontario need an interim standard while the National Process is undertaken?

The Council will assess the Draft Guideline Technical Document to consider whether or not to advise Ontario to adopt an interim standard.

Input: Council to receive Draft Guideline Technical Document, and, when required, other documentation for review, decision sought, scientific references, and a presentation by the Ministry (including information on the range of values and possible compromises made at the national level, as well as known and potential contentious issues).

Output: Council to convey advice on possible interim standard to the Minister for implementation consideration by the Ministry of the Environment.

i. Undertake Independent Consultation (If warranted)

The question before the Council at this sub-stage is:

Does the Council feel that it needs to undertake its own consultation to gain a better understanding of stakeholder and public concerns?

The Council could use the following consultation methods to obtain more or different information about a standard: EBR Information Posting, peer review, stakeholder information sessions, or public meetings.

Input: Draft Guideline Technical Document

Output: Council to use information gleaned from independent consultation process to provide advice to the Ministry of the Environment, for inclusion in Ontario's position.

Council Engagement Stage 3:

Assess Comments from National Public Consultation

The question before the Council at this stage is:

Does the Council have any concerns that arise from the comments received from the national public consultation?

The Council's role in this stage is to take into account comments received from the National public consultation process.

Input: Council to receive public comments from the national consultation.

Output: Council to use comments received for inclusion in the analysis and formulation of Ontario's position, as well as to assess the Draft Final Guidance Technical Document in Stage 4.

Council Engagement Stage 4:

a. Assess Draft Final Guideline Technical Document

The question before the Council at this sub-stage is:

Does the Council have any concerns with the Draft Final Guideline Technical Document?

This stage is positioned after public consultation, but before the Canadian Drinking Water Quality Guideline is approved, or any other document goes to the Federal-Provincial-Territorial Committee on Drinking Water (CDW) and the Federal-Provincial-Territorial Committee on Health and the Environment (CHE).

The Council's role in this stage is to assess the Draft Final Guideline Technical Document, taking into account the assessment of the comments received from the National public consultation process in Stage 3.

Input: Draft Final Guideline Technical Document; Presentation by Ministry of the Environment and / or Health Canada expert.

Output: Assessment to be used in providing advice to the Ministry of the Environment on the acceptability of the Draft Final Guideline Technical Document, in relation to Ontario.

b. Undertake Independent Consultation (If warranted)

The question before the Council at this sub-stage is:

Does the Council feel that it needs to undertake its own consultation to gain a better understanding of stakeholder and public concerns?

The Council could use the following consultation methods to obtain more or different information about a standard: EBR Information Posting, peer review, stakeholder information sessions, or public meetings.

Input: Draft Final Guideline Technical Document and comments received from the National public consultation process.

Output: Council to use information gleaned from independent consultation process to provide advice to the Ministry of the Environment, for inclusion in Ontario's position.

c. Determine and Convey Position to MOE (Informal)

There are 2 questions before the Council at this sub-stage:

1. *Should the Ontario Standard be set at a level different from the Canadian Drinking Water Quality Guideline?*
2. *How should the Standard be applied in Ontario?*

The Council's role in this stage is to propose an Ontario Drinking Water Quality Standard, Objective or Guideline, including operational advice, if deemed necessary, in order to provide advice on how the standard is to be applied in Ontario, in regards to sampling, compliance, and regulation.

It should be noted that the Council will only propose an Ontario Drinking Water Quality Standard, Objective, or Guideline that is equivalent to or more stringent than a Canadian Drinking Water Quality Guideline.

Input: Draft Final Guideline Technical Document, comments received from the National public consultation process, and information gleaned from independent consultation process, if undertaken.

Output: Council to provide informal advice to the Ministry of the Environment on the proposed Ontario Drinking Water Quality Standard, Objective, or Guideline, and its application in Ontario, if deemed necessary.

Council Engagement Stage 5:

Transmit Advice Letter to Minister (Formal)

The Council's role in this stage is to formally transmit its advice to the Minister of the Environment, on a proposed Ontario Drinking Water Quality Standard, Objective, or Guideline, or an alternative recommendation.

This transmittal can occur anytime after approval has been granted for the Canadian Drinking Water Quality Guideline by both the Committee on Drinking Water (CDW) and the Committee on Health and the Environment (CHE).

The advice may also outline how the standard is to be applied in Ontario, in regards to sampling, compliance, and regulation, if warranted.

It should be noted that the Council will only propose an Ontario Drinking Water Quality Standard, Objective, or Guideline that is equivalent to or more stringent than a Canadian Drinking Water Quality Guideline, or existing Ontario Drinking Water Quality Standard.

- Input:** Ministry of the Environment Liaison staff member notify the Council when both CDW and CHE have approved the final Canadian Drinking Water Quality Guideline, and supply the final Guideline Technical Document to the Council.
- Output:** Council to provide formal advice to the Minister of the Environment on the proposed Ontario Drinking Water Quality Standard, Objective, or Guideline, and its application in Ontario, or make an alternative recommendation, if warranted.

Appendix D - Terms of Reference

These following Terms of Reference were agreed upon by the Council and finalized by the Council's Chair and the Minister of the Environment, on November 5, 2004.

1. Definitions

In these Terms of Reference (TOR):

- a) "the Act" means the *Safe Drinking Water Act, 2002*;
- b) "the Council" means the Advisory Council on Drinking-water Quality and Testing Standards;
- c) "the Ministry" means the Ministry of the Environment;
- d) "the Chair" means the Chair of the Advisory Council on Drinking-water Quality and Testing Standards;
- e) "the Minister" means the Minister of the Environment;
- f) "the Deputy Minister" means the Deputy Minister of the Environment.

2. Preamble

The purpose of the TOR is to describe the operational, administrative and reporting relationships between the Minister and the Chair, the Chair and the Deputy Minister, and reflect the powers of the Council as an advisory agency as set out in Schedule C of the 'Agency Establishment and Accountability Directives'.

The TOR should be used in conjunction with the legislation governing the Council and its constituting instrument to determine how the Council should govern itself. This TOR does not affect, modify, limit or interfere with the responsibilities of any of its parties under law. In the event of any conflict between the TOR and any law, the law prevails.

3. Duration and Review of Terms of Reference

The TOR will become effective on the date of its signature by the parties and will remain in effect for five years or until a new TOR is agreed to by the parties.

The TOR must be reviewed at the expiry of the term or prior to that at the request of any of the parties involved.

4. Legislative Authority

The legislative authority of the Council is set out in Section 4 of the *Safe Drinking Water Act, 2002*.

5. Mandate

The mandate of the Council is to provide advice and make recommendations to the Minister of the Environment on matters related to standards for drinking-water quality and testing. Activities of the Council may include but not be limited to:

- a. Review research and scientific and technical documentation related to drinking-water quality and testing standards;
- b. Publish information in the Environmental Registry established under section 5 of the *Environmental Bill of Rights, 1993* and undertake additional consultation with and solicit views from the general public as necessary and provide feedback;
- c. Forward recommendations and their rationale to the Minister within a specified time frame;
- d. When directed by the Minister, provide advice on policies, practices and procedures to be used in the development of standards; and, priorities for the development of standards, testing methods and related research; and
- e. Make recommendations to the Minister on other matters it has identified as being priorities and which merit the attention of the Minister and/or the Ministry.

6. Guiding Principles

The parties agree that they will adhere to the following principles:

- a. The Minister recognizes that the Council is a statutory entity which exercises powers and performs duties in accordance with its mandate under the Act;
- b. The Minister recognizes that the Council operates at “arms length” from the Government;
- c. The Council acknowledges that it is accountable to the Government in exercising its mandate. Accountability is a fundamental principle to be observed in the management, administration and operations of the Council;
- d. As an agency of the Government, the Council conducts itself according to the management principles of the Government of Ontario;
- e. The Deputy Minister will ensure that the support or services provided to the Council are of the same quality and standard as provided to the Ministry’s own line divisions and branches.
- f. The Council and the Ministry must avoid duplication of services.

7. Reporting Relationships

The parties agree that:

- a. The Council is committed through the Chair to the reporting requirements as outlined in Schedule 2 (attached);
- b. The Chair will keep the Minister advised of issues or events that concerns or may concern the Minister in the exercise of his or her responsibilities;

- c. The Minister and the Chair will consult with each other on relevant public communications strategies and publications and will keep each other informed on the results of stakeholder and other public consultations and discussions;
- d. The Chair will provide reports containing the Council's advice on a specified subject and reports commissioned by the Council to the Minister. The public release of said advice or reports shall be at the discretion of the Minister; statements to the press with respect to such advice or reports are not appropriate until the report is publicly released by the Minister; and
- e. The Minister and the Chair will meet as required to discuss issues relating to the delivery of the Council's mandate.

8. Accountability

The accountability of the parties is as follows:

- a. The Minister is accountable to the Legislature for the Council's fulfillment of its mandate, its compliance with Government policies and for reporting to the Legislature on the Council's affairs;
- b. The Chair is accountable to the Minister for the performance of the Council in fulfilling its mandate and for carrying out the roles and responsibilities assigned to the Chair by Management Board of Cabinet Directives and Guidelines, the Council's constituting instrument and the TOR; and
- c. The Deputy Minister is accountable to the Minister for the performance of the Ministry in providing administrative support (including staffing and funding) to the Council and for carrying out the roles and responsibilities assigned to him or her by the Minister, by Management Board of Cabinet Directives and Guidelines, the Council's constituting instrument, and the TOR.

9. Roles and Responsibilities

The **Minister** is responsible for:

- a. Monitoring the activities of the Council to ensure that its mandate is being fulfilled and that it is in compliance with Government policies;
 - b. Reviewing, approving and presenting the estimated/recommended annual allocation for the Council as part of the Ministry's Business Plan;
 - c. Consulting with the Chair as appropriate when significant new directions for the Council are contemplated or when initiatives are taken to amend any legislation or regulations which may affect the mandate of the Council;
 - d. Ensuring that proposed changes to the governing legislation/regulation are accompanied by a recommendation on the continued need for the Council's services and the appropriateness of its mandate;
 - e. Recommend appointments and reappointments pursuant to the process for Council appointments established by legislation or by Management Board, after consultation with the Chair as appropriate; and
 - f. Meeting with the Chair of the Council as required.
-

The **Chair** is responsible for:

- a. Directing the affairs of the Council within its mandate as defined by the Act, the Council's constituting instrument and the TOR;
- b. Ensuring that the Council carries out the responsibilities assigned to the Council or its Chair under the Act, the Council's constituting instrument and the TOR;
- c. Providing advice to the Government and seeking policy direction from the Government in specific instances;
- d. Keeping the Minister advised of issues or events that concern or can reasonably be expected to concern him or her in the exercise of ministerial responsibilities;
- e. Ensuring that matters relating to the Council which are of importance to the Ministry are brought to the attention of the Minister and the Deputy Minister in a timely fashion;
- f. Recommending all formal documents related to the fulfillment of the Council's mandate to the Government for approval;
- g. Reviewing the Council's annual budget and bringing it forward to the Minister and the Deputy Minister for approval;
- h. Reviewing the Council's annual report and bringing it forward to the Minister and the Deputy Minister by July 31 of each year;
- i. Ensuring that public funds are used in accordance with management Principles of the Government of Ontario - ensuring that the Council operates within the approved funding in the fulfillment of its mandate;
- j. Attending and/or making presentations before Cabinet or committees of Cabinet or the Legislature on matters concerning the affairs of the Council when requested to do so;
- k. Notifying the Minister of appointment vacancies and making recommendations to the Minister on appointments and reappointments of Council members pursuant to the process for Council appointments established by Management Board of Cabinet;
- l. Ensuring Council compliance with Management Board of Cabinet Directives and Guidelines, and the Ministry's Administrative Policy Manual;
- m. Ensuring that conflict of interest matters are handled in accordance with Management Board Directives; and
- n. Ongoing liaison with the Director of the Ministry's Standards Development Branch to exchange information and ideas related to the administration and operation of the Ministry of the Environment and the Council as they impact upon each other.

The **Deputy Minister** is responsible for:

- a. Advising and assisting the Minister in meeting assigned ministerial responsibility with respect to the Council and ensuring that the Minister is advised of the requirements of Management Board Directive of the administration of agencies;
- b. Undertaking on behalf of the Minister, assessments of whether or not the Council is fulfilling its legislative mandate in concert with approved Government policies; identifying any need for corrective action and recommending ways to resolve any issues that are identified;
- c. Providing a framework for assessing whether the Council is fulfilling its mandate;
- d. Ensuring the ministry is providing the administrative support, financial and other services as set out in the TOR and Schedule 1 (attached) to reflect the same quality and standard as provided to the Ministry's own line divisions and branches;
- e. Meeting with the Chair, as required, to discuss matters of mutual importance to the Council and the Ministry, such as services provided by the Ministry to the Council;
- f. Informing the Council of the policies of the Ministry and the Government that apply to the Council, including financial and administrative, human resources and corporate policies, including policies in respect of French language services, freedom of information, workplace harassment and equal opportunity; and
- g. The Deputy Minister may, in accordance with the *Public Service Act* and applicable Government directives, delegate any of the powers and duties assigned to him or her by law, as they pertain to the Council.

10. Finances

- a. The Council is funded out of the Consolidated Revenue Fund pursuant to an appropriation authorized by the Legislature, unless otherwise provided.
- b. Recovered costs and other revenues, if any, are paid, as received, to the Consolidated Revenue Fund and may not be applied to as administrative expenditures for the Council unless otherwise provided by law.
- c. Financial arrangements are subject to amendment by such revenue policy directives as the Management Board of Cabinet may issue. Financial arrangements may also be changed by amendment to the Council's constituting instrument.
- d. The Council prepares estimates for inclusion in the Business Plan of the Ministry for presentation to the Legislature. The Council will deliver these estimates to the Minister and Deputy Minister in sufficient time to be analyzed and approved by the Minister and Deputy Minister. The estimates provided by the Council may, after appropriate consultation with the Chair, be altered as required.
- e. Financial procedures of the Council must be in accordance with Management Board of Cabinet Directives and Guidelines, the Ministry's Administrative Policy Manual and other directives of the Ministry and Government.

- f. Responsibility for the maintenance of documentation and information to support expenditures is assigned to the Chair as outlined in the Accounting Policy of the Ministry.

11. Audit Arrangements

- a. The affairs of the Council shall be subject to audit by both the Management Audit Branch of the Ministry and by the Provincial Auditor. The Ministry and the Council shall arrange mutually agreeable times for audit by the ministry at least once per annum.
- b. The results of any audit by Ministry staff will be shared with the Chair. The Chair will be accorded an opportunity to enter his or her comments into the audit record.
- c. The Chair shall direct to the Minister through the Ministry all correspondence of the Council with the provincial Auditor in response to the findings, conclusions and recommendations of the Provincial Auditor's report. The Chair shall consult with the Director of the Ministry's Management Audit Branch throughout the audit process.
- d. The Chair may request an external audit of the financial transactions or management controls of the Council at the Council's expense.

12. Administrative Arrangements and Support

- a. The Ministry is committed to providing the Council with the full range of financial and administrative support services either directly or through shared service agreements as outlined in Schedule 1 (attached) to this TOR. The services will be provided to the same quality and standard as provided to the Ministry's own line divisions and branches.
- b. The Council is an advisory agency as designated by the Management Board of Cabinet. The Chair will develop procedures and will operate the Council in accordance with all administrative policies established and specified in Management Board of Cabinet Directives and Guidelines and the Ministry's Administrative Policy Manual.
- c. The Council may engage persons to provide professional, technical or other assistance to or on behalf of the Council, and may provide payment or remuneration and expenses of such persons in accordance with the Government's and the Ministry's policy.
- d. If the Council requires consultant or other services, the following shall be adhered to:
 - i. the Council will use the administrative services of the Ministry in developing, tendering and administering contracts;
 - ii. all tendering will be consistent with the procedures contained within the Management Board of Cabinet Directives and Guidelines and the Ministry's Administrative Policy;
 - iii. the Council's signing authority and single/sole authority is in accordance with the Ministry Delegation of Authority Framework;

- iv. in order to avoid the duplication of services already available from the Ministry, all requests from the Council for either internal or external creative services (i.e. Web page design, desktop publishing, advertising) will be forwarded to the Communications Branch for review and approval by the Director; and
 - v. to ensure documents are in accordance with government graphic design guidelines the Council should forward any changes in graphic designs or any new documents to Communications Branch for review and approval by the Director.
- e. Legal Services to the Council are to be provided by the Ministry of the Attorney General.
- f. The Council may request outside legal assistance when it requires expertise unavailable within the Ministry of the Attorney General or when the use of a law officer of the Crown would result in any conflict of interest.
- g. The Ministry of the Attorney General must approve retention of outside legal counsel by the Council. The Council will refer to and comply with the Management Board of Cabinet Directives and Guidelines on legal services and the retention of counsel when obtaining external legal counsel.

13. Staffing and Appointments

- a. The Council is staffed by persons appointed under the *Public Service Act* and eligible for all those rights and benefits accorded under the *Public Service Act*, and relevant collective agreements.
- b. All recommendations for new appointments and reappointments to the Council will be reviewed by the Minister's Office and the Public Appointments Secretariat.
- c. The Council in its dealings with staff appointed under the *Public Service Act* is subject to Management Board of Cabinet Directives and Guidelines.
- d. The Council is also governed by:
 - i. the policies of the Civil Service Commission;
 - ii. the human resources manual of the Ministry;
 - iii. the corporate financial and administrative policies and procedures manual;
 - iv. applicable collective agreement provisions; and
 - v. any other applicable legislation or regulations.

14. Conflict of Interest

- a. All members of the Council appointed by the Minister shall abide by the conflict of interest principle and mandatory requirements set out in the Management Board of Cabinet Directives.

SCHEDULE 1: ADMINISTRATIVE SUPPORT

The Deputy Minister will ensure that the support or services provided to the Council are of the same quality and standard as provided to the Ministry's own line divisions and branches either directly or through shared services agreements:

1. **Financial Administration:** pay and benefits administration, accounts payable and technical advice, purchasing, central mail and printing services, and records and form advisory services.
2. **Human Resources Services:** classification; advice and consultation regarding recruitment procedures and staff relations; job description writing; counselling regarding career planning and staff development; and advice and consultation regarding corporate initiatives such as Occupational Health and Safety, etc. Corporate educational opportunities and career planning services are available and open to Council staff and the Ministry must assist the Chair in ensuring that these are communicated effectively to Council staff.
3. **Information Technology and Telecommunications Services:** advice and consultation.
4. **Internal Audit:** financial compliance, management, human resources and information systems audits; operational reviews and special investigations as required.
5. **Accommodation Planning:** including lease renewals.
6. **Freedom of Information Program:** services as required.
7. **French Language Services:** translation and interpretation services.
8. **Communications:** communications planning, preparation of communications documents i.e. news releases, backgrounders, posting of documents on ministry websites, assistance in the preparation of public documents.

SCHEDULE 2: REPORTING REQUIREMENTS

The Chair ensures that the following reports, statements and documents are submitted to the Minister for review and approval:

1. Annual reports are required by July 31 of each year. The Annual report should describe the Council's accomplishments and a list of activities undertaken during the preceding year; and
2. Financial reports as required by Ministry's internal financial reporting requirements; and
3. Other reports that may be required by the Council's governing legislation or regulation(s) or reports as the Minister may require from time to time.

Appendix E - Website

The Council's website, www.odwac.gov.on.ca, continued to be an important source of information for the general public, drinking water stakeholders, Ministry of the Environment, and Ministry of Health and Long-Term Care staff.

The Council's website was re-developed and updated to provide information on:

- History and establishment of the Council
- Mandate
- Requests from the Minister of the Environment
- Standards Review
- Proactive Initiatives
- Stakeholder Consultations
- Public Minutes from Council Meetings
- Reports to the Minister of the Environment
- Annual Reports
- Drinking Water-related Announcements
- Links to other Drinking Water-related Websites
- Members' Biographies
- Contact Information

Appendix F - Council Members' Biographies

Dr. Robert Andrews is Professor and Associate Chair of Research in the Department of Civil Engineering at the University of Toronto and Senior NSERC Industrial Research Chair holder in Drinking Water Research. Dr. Andrews has obtained extensive experience in water treatment practice with many projects involving drinking water disinfection, microbial inactivation of pathogens, formation and minimization of disinfection by-products, and optimization using innovative methods and application of membrane processes for removal of emerging contaminants.

Dr. Ronald Brecher is a founding partner of GlobalTox International Consultants - a Canadian corporation that assesses the impact of toxic chemical exposures on human health. Dr. Brecher is one of about 45 Canadians certified by the American Board of Toxicology. He is an Adjunct Professor, School of Planning, at the University of Waterloo and teaches a part of the Advanced Principles of Toxicology course at the University of Guelph. In addition to his risk assessment and toxicology practices, Dr. Brecher provides risk communication training and issue-specific support to a diverse group of public and private sector clients.

Dr. Mary Jane Conboy is the Executive Director of Well Wise Resource Centre, a non-profit company dedicated to providing education, training, resources and research on private wells. Prior to this, Dr. Conboy worked with well owners through her research and as a hydrogeologist for the Ontario Federation of Agriculture (OFA) and the Green Communities Canada Well Aware program. Dr. Conboy is a licensed Geoscientist who co-authored a technical paper for the Walkerton Inquiry, worked with farmers experiencing water problems, represented OFA on provincial committees, led an audit of well projects in Ontario, and sat on an expert panel for water well sustainability in Ontario. Dr. Conboy also chairs the Association of Professional Geoscientists of Ontario (APGO) Nutrient Management committee and the APGO working group for the Water Wells regulation, and recently co-authored a consumer's guide for private wells and a children's book on wells and the water cycle.

Michèle Giddings is the Manager of the Water Quality and Science Division in the Water Quality and Health Bureau, Healthy Environments & Consumer Safety Branch, Health Canada. She is on Health Canada's Secretariat for the Federal/Provincial/Territorial Committee on Drinking Water. Ms. Giddings is currently co-coordinator of the Disinfectants and Disinfection By-products Working Group for the World Health Organization's Guidelines for Drinking Water Quality. Ms. Giddings has also developed a number of drinking water guidelines for Health Canada and the World Health Organization.

Rod Holme is the former Vice-President of the water and wastewater division of a major international consulting company and is currently an independent consultant on drinking water. Mr. Holme is past President of the American Water Works Association and most recently chaired their International Council. Mr. Holme also served as Chair of the Joint Committee on Water Regulations for the Ontario Water Works Association and the Ontario Municipal Water Association for many years, and has extensive experience in technical and project management of municipal water supplies.

Dr. Peter Huck is a Professor in the Department of Civil and Environmental Engineering, a National Science and Engineering Research Council (NSERC) Chair in Water Treatment and University Research Chair at the University of Waterloo. Dr. Huck has undertaken extensive research in water quality and treatment in areas such as the robustness of water treatment systems, membrane and ultra-violet treatment, the removal pharmaceuticals and endocrine disrupting substances, and the determination of pathogen loadings in watersheds, among other topics.

Dr. Alexander Hukowich is the former Medical Officer of Health for the Haliburton, Kawartha, Pine Ridge Health Unit and coroner for Northumberland County, and was nominated for the Council by the Association of Local Public Health Agencies.

Derrick Kamanga is a professional engineer with over 25 years of experience in the design, water treatability studies, membrane pilot studies, utility operation, community planning, and project management of water and wastewater treatment systems. Mr. Kamanga's academic qualifications include a Master of Engineering degree, and the authoring of several papers including "Transportation of Pollutants by storm runoff from Agricultural Lands". Other experiences include the preparation of Engineering Reports for several municipalities in Ontario. Mr. Kamanga has been a technical advisor to the First Nations for over 10 years, throughout Canada, and is in charge of Peer Review Engineers and prepared the first Terms of Reference for Engineering Reports covering First Nations Wastewater systems. Currently, Mr. Kamanga works with the Ontario First Nations as the Senior Engineer, Water & Wastewater, supervising peer review engineers, and managing the Aboriginal Water and Wastewater Association of Ontario (AWWAO) and consultants working for First Nations, providing training for the certification of plant operators.

Dr. Robert Lannigan is a Professor of Medicine, Microbiology and Immunology at the Schulich School of Medicine and Dentistry, University of Western Ontario, and is also a member of the Ecosystem Health Team at the same facility. Dr. Lannigan's primary activity is as the medical leader of the Clinical Microbiology Laboratory of the London Laboratory Services Group, which is a city-wide diagnostic microbiology service for the London hospitals. Dr. Lannigan is a member of the American Society of Microbiology, the Canadian Hospital Infection Control Association and the Association of Medical Microbiology and Infectious Diseases, Canada, and is also a member of the Ontario Medical Association.

Jim Merritt is a senior consultant focused on environmental consulting, municipal infrastructure and water management. Mr. Merritt has assisted clients with managing regulatory issues, operational and organizational planning and strategic assessments of environmental situations. Mr. Merritt was the Assistant Deputy Minister of Operations Division with the Ontario Ministry of the Environment, responsible for environmental protection and regulatory services, including approvals and environmental assessments. Mr. Merritt also led the establishment of the Ontario Clean Water Agency and was the vice-president responsible for water and wastewater plant operations, engineering services, computer systems and information management. While with the Ministry of the Environment, Mr. Merritt served in various Directorship positions, including Central Region, Policy and Planning Branch, and the Administrative Services Branch, and is currently the Chair of the Advisory Council on Drinking Water Quality and Testing Standards.

Dr. Ken Roberts has over 40 years experience in the field of water resources engineering and management. Dr. Roberts' experience is gained through a number of water-quality-related positions in the Ontario Ministry of the Environment (formerly the Ontario Water Resources Commission) and with XCG Consultants Ltd. Dr. Roberts is currently an independent consultant, with experience in water and wastewater engineering, treatment and research, with a focus on drinking water. Dr. Roberts is also an Honorary Member of the American Water Works association.

John Rudnickas was the Manager of Water Quality for the City of Toronto. A chemist by training, Mr. Rudnickas has extensive experience in all aspects of quality assurance / quality control in large drinking water systems, and was responsible for the management of the City of Toronto's accredited and licensed laboratory for drinking water testing. Mr. Rudnickas is currently involved with the Walkerton Clean Water Centre in the training of drinking water operators, and is a member of the Ontario Water Works Association and is on the Water Quality Committee of the Canadian Water and Wastewater Association. Mr. Rudnickas is also a member of the American Water Works Association.

Dr. Lesbia Smith is an Assistant Professor at the University of Toronto and Clinical Research Associate of the McMaster University Institute of Environment and Health. Dr. Smith holds a Medical degree, and is the former head of the Environmental Health and Toxicology Unit of the Public Health Branch of the Ontario Ministry of Health and Long-Term Care. Dr. Smith has researched drinking water quality and chronic diseases such as non-bladder cancer (by-products of chlorination) and Alzheimer's disease (aluminum) and has participated in the development of several Ontario Drinking Water Quality Standards. Dr. Smith's current work as environmental health consultant includes human health impacts of proposed industrial undertakings and contaminated sites.

Robert Walton is the Director of Public Works for the County of Oxford. He is the former Manager of Water and Wastewater Services. Prior to joining the County of Oxford, Mr. Walton worked as a consulting engineer. Mr. Walton is a member of the Ontario Municipal Water Association and has served on the Drinking Water Committee of the Association of Municipalities of Ontario, represents the Ontario Municipal Water Association, and is a Professional Engineer.

Appendix G - Contact Information

Mailing Address:

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