MAKING THE GRADE?

An evaluation of drinking water reports in Ontario

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Written by:
Bryan Davis
Burkhard Mausberg

Edited by:
Tammie Hall

Researched by:
Bryan Davis
Claudia Heindorf
Michael Esvelt

Canadian Environmental Defence Fund
Fonds canadiens pour la protection environnementale

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Many thanks to the officials of the cities and regions contacted for this study for their cooperation in promptly replying to our questions and inquiries.

1. EXECUTIVE SUMMARY

This study examines drinking water reports from ten major Ontario cities to determine the adequacy of the existing requirements under the *Drinking Water Protection Regulation* (DWPR) for reporting water quality to Ontarians. Each report is evaluated in two areas:

(i) content
(ii) promotion and accessibility

The criteria for evaluation were based upon existing requirements in the DWPR, as well as requirements for U.S. "consumer confidence reports" – annual drinking water reports issued by American water providers.

The average overall grade for the ten Ontario drinking water reports is a C, with a range from D to B+. Each city is ranked below according to their overall grades:

CITY	OVERALL	CONTENT	PROMOTION & ACCESSIBILITY
1. Kingston	**B+**	B-	A+
2. Hamilton	**B+**	C+	A+
3. Ottawa	**C+**	B	C-
4. St. Catharines	**C+**	D+	A-
5. Toronto	**C**	C+	C
6. Oshawa	**C**	C-	B-
7. Sudbury	**C**	D	B+
8. Thunder Bay	**C-**	C-	C
9. Windsor	**D+**	C-	D+
10. London	**D**	D	D

In general, the strengths of the reports include:

- appropriate statements of safety;
- easy accessibility, and
- provision of contact information for the city or water provider.

However, the results also reveal significant discrepancies in the type, quality, and quantity of information included in these reports, as well as the efforts taken to advertise their availability to the public. Overall, it was found that:

- most municipalities or regions are not undertaking adequate efforts to effectively advertise the availability of these reports to the public;
- most of the reports do not include a warning statement for vulnerable populations;
- many reports do not provide a comprehensive description of efforts taken to comply with the DWPR;

- most reports do not include information on opportunities for public input and participation;
- the summary table in many reports lists the test results for all parameters rather than just detected contaminants;
- most reports do not provide a brief written description of the summary table;
- most reports do not adequately describe the location of the water intake, and
- many reports do not describe the types of contaminants found in raw water or include a statement about which contaminants may reasonably be expected to be found in drinking water.

This study provides specific recommendations for each water provider to improve its reporting, in addition to identifying broader regulatory changes that need to be made by the Ontario government. The latter include:

- continuing to require water providers to prepare quarterly reports of test results that are submitted to the Ministry of the Environment and made available to the public;
- requiring water providers to prepare an additional annual drinking water "right-to-know report";
- establishing minimum content requirements for these annual reports, and
- putting these annual reports directly into the hands of the public.

Legally entrenching these recommendations will assist water providers in effectively reporting to the public, supplying community members with the information they need to know to protect their health and their environment.

2. THE PUBLIC'S RIGHT-TO-KNOW

2.1 The Principle of Right-to-Know

In its broadest sense, 'right-to-know' (RTK) ensures access to a variety of facts relating to environmental health, as well as public, worker, and consumer safety. It serves as a check on government, industry and other entities by using transparency and reporting to achieve greater accountability. Increasing the accessibility of high quality information raises public expectations of sound policy and practice in the public health and environmental protection fields.

2.2 Right-to-Know and Drinking Water

Ensuring the public's right-to-know about the quality of its drinking water is essential to effectively mitigating health risks and establishing proactive barriers to contamination. The United States recognized the importance of RTK in the *Safe Drinking Water Act* (SDWA) Amendments of 1996, which established a number of RTK tools that keep the community informed, facilitate public participation in drinking water protection, and instil greater accountability among government agencies and public water providers. Ontario's *Drinking*

Water Protection Regulation (DWPR) also includes some RTK tools that promote greater transparency. This study focuses on one tool established by the DWPR: Quarterly Reports on drinking water quality.

3. DRINKING WATER RIGHT-TO-KNOW REPORTS

3.1 Usefulness of Right-to-Know Reports

Regular public reporting in the form of right-to-know (RTK) reports is a valuable tool that helps the public understand the basic facts about the environment and enables citizens to make informed and intelligent decisions about the health and safety of their families. With regards to drinking water, water providers can include important information in the RTK report, such as the location and quality of the source water, the techniques used to treat the water, the contaminants found in the drinking water, and potential health hazards. The contents of these reports can thus alert individuals and their doctors to a possible cause of illness, as well as mobilize concerned citizens to eliminate sources of pollution threatening drinking water sources. These reports can also assist water providers by publicly demonstrating the need for upgrading facility systems and infrastructure.

Drinking water reports generally do not impose a significant financial burden on water providers, as producing the reports typically does not require additional monitoring or information collection. However, drinking water reports can only be effective if the public is aware of their existence, which means putting the reports directly into the hands of the public or actively advertising the availability of the reports.

3.2 Primary Audience

The primary audience for drinking water reports is the public. The reports, therefore, should be written in a manner that is easy for citizens to understand without compromising important content. Although more technical information is appreciated by researchers and others with special interests in drinking water, an overload of complex information will deter the primary audience from reading the reports.

3.3 Ontario's Quarterly Water Quality Reports

Section 12 of Ontario's *Drinking Water Protection Regulation* (DWPR), which falls under the *Ontario Water Resources Act*, requires water treatment and distribution facilities to issue a drinking water report every three months. However, the DWPR's content requirements for these drinking water reports are vague, and fail to establish an adequate standard of necessary content. Nonetheless, the reports must include:

- a description of the water system and its operations;
- information on the source of the drinking water;

- a summary of analytical tests results taken during the quarter, and
- a description of the measures taken by the water provider to comply with the DWPR.

The Ministry of the Environment (MOE) provides some content guidelines, which are not legally binding, in a technical brief entitled "Waterworks' Quarterly Reports for Consumers."[1]

Moreover, the DWPR establishes two requirements pertaining to the accessibility of these reports:

(1) that the reports be made available to the public, free of charge, at a reasonably convenient location, such as the office of the water providers or the municipality, and
(2) that water providers servicing more than 10,000 individuals post their quarterly reports – current and archived – on the Internet.

Water providers are further required to take "effective steps" to advise the public about the availability of these reports.

To date, three rounds of quarterly reports have been issued. This study evaluates reports covering the first three months of 2001.

3.4 U.S. Consumer Confidence Reports

In the U.S., consumer confidence reports (CCR) are the centrepiece of the numerous "right-to-know" provisions in the *Safe Drinking Water Act* Amendments of 1996. Since 1999, water providers have been required to put an annual drinking water report directly into the hands of consumers. The Amendments also establish clear baseline requirements regarding the contents of CCRs and the methods for distributing them.

Overall, the U.S. requirements for the content and delivery of CCRs are much broader and more comprehensive than those for Ontario's quarterly drinking water reports, thus providing Americans with the basic information they need to understand their drinking water and its potential health hazards.

At a minimum, CCRs must include:

- identification of the source of the drinking water;
- a brief summary of the susceptibility of the drinking water source, based on source water assessments;
- instructions on how to obtain a copy of the source water assessment;
- a summary table that includes information on the range of any regulated contaminant found in the drinking water supply,[2] the U.S. Environmental Protection Agency's

[1] The technical brief is available at <http://www.ene.gov.on.ca/envision/WaterReg/RV3982E.pdf>
[2] Information on some unregulated contaminants, such as cryptosporidium and radon, must also be included.

(EPA) health-related goal for comparison, and the known or likely source of contamination;
- incidents of non-compliance with other drinking-water related rules, such as monitoring and testing;
- an explanation of the significance of the results;
- corrective action taken by the water works in the case of a rule violation;
- the potential health effects of any detected contaminant regulated by the EPA;
- educational statements for vulnerable populations on avoiding *Cryptosporidium*, as well as information about nitrate or lead in areas where these contaminants are detected at levels greater than 50% of the EPA standard, and
- contact information for additional sources of information, including the water provider and the EPA's Safe Drinking Water Hotline.

Some states, such as California and New Jersey, have established even more stringent content requirements for vulnerable population warnings, translation requirements, and notices for opportunities for public involvement.

In addition to stipulating the contents of the report, the *National Primary Drinking Water Regulations*[3] require water providers to mail or otherwise deliver a copy of the CCR to each consumer and primary enforcement agency by July 1 of each year. Water providers must also make a "good faith" effort to reach consumers who do not receive water bills. Furthermore, water providers servicing 100,000 or more persons must post their CCRs on the Internet. New Jersey law also stipulates additional posting requirements for:

- rehabilitation centres, extended care facilities, and nursing homes;
- child care centres;
- public and non-public schools, and
- multiple dwellings.

Reports must be posted in a conspicuous place at each of these locations.

[3] These are the accompanying regulations to the SDWA Amendments of 1996.

4. CRITERIA FOR EVALUATING ONTARIO'S DRINKING WATER REPORTS

The purpose of this study is to review the way in which information concerning drinking water quality is communicated to the public, **not** to evaluate the quality of water being distributed by local water providers. The criteria for evaluation were developed using:

- Ontario's requirements under section 12 of the *Drinking Water Protection Regulation* (DWPR);
- U.S. regulatory requirements for "consumer confidence reports", and
- additional requirements of select states, such as New Jersey.

Evaluations of the drinking water reports were divided into two main categories:

A. Content
   1. information on the source water
   2. efforts taken to comply with the DWPR
   3. summary table of contaminants
   4. readability: language and content
   5. readability: format
   6. statements about public health and safety
   7. information on opportunities for public input and participation
   8. violations of standards (if applicable)

B. Promotion and Accessibility
   1. efforts taken to advertise the reports
   2. online accessibility of the reports

The "Content" section was graded separately by three CEDF staff members. Their scores were later averaged to ascertain the final grade for the section.

The "Promotion and Accessibility" grade was determined according to responses to telephone interviews with staff from the cities or regions of the reports reviewed, as well as the ease with which the drinking water report could be accessed online.

A. Content

1. Information on the Source Water

Drinking water reports can play an important role in communicating the need to safeguard drinking water sources, possibly triggering efforts to protect them. At a minimum, drinking water reports should include the name of the drinking water source and the precise location of the intake pipe, as it is important to identify the source water's vulnerabilities to contamination from nearby activities (industry, development, sewage treatment plants, etc.). Furthermore, a

description of the types of contaminants that may be found in raw and treated water (e.g. microbial, inorganic, etc.) should be included.

2. Efforts Taken to Comply with the DWPR

Water providers should include a brief description of their efforts to comply with the DWPR. This provides them with an opportunity to notify the public that they are doing everything required (and sometimes more) to meet the regulated standards and practices. Evaluation of this section is based upon description of compliance with the following:

- sampling requirements;
- treatment requirements;
- use of accredited laboratories and licensed operators;
- the availability of all sampling tests to the public, and
- the notification protocol for violations.

This information is displayed effectively when grouped under one heading. Otherwise, readers unfamiliar with the DWPR requirements will be unable to easily determine what efforts have been taken by their water provider to comply with the *Regulation*.

3. Summary Table of Contaminants

The purpose of this table is to communicate in a simple manner the testing results of the water sampled over the three month period. The Ministry of the Environment (MOE) includes a good example of a summary table in its technical brief on quarterly reports mentioned above.

The contents of the table should include, at a minimum:

- the units of measurement;
- the appropriate Ontario drinking water standard;
- the range of detectable results or the highest detectable result;[4]
- the typical source of the contaminant; and
- a clear indication of whether there was a violation of an Ontario standard.

The best way to present this technical information to the given audience is to include only detected contaminants[5] in the table. As a result, the information can be concisely presented in one or two pages, rather than an overwhelming seven or eight pages (as in some reports).

4. Readability: Language and Content

The readability of a report is essential for effectively communicating important and sometimes complex information about drinking water. The language should be easy to understand, including

[4] Including the range or the highest detectable result in these reports is important for determining whether a parameter has been violated and, if so, by what amount. Simply including the average result is, therefore, inadequate.

[5] That is, contaminants detected above the detection limit.

definitions of key terms for readers unfamiliar with the technical language. The report should include a brief description of the findings of the summary table, as well as visual aids (simple maps, diagrams, etc.) to ensure that the content is understandable for all readers.

5. Readability: Format

The format of the drinking water report is also fundamental to effective communication, as a straightforward layout enables readers to easily navigate the report for information of personal interest. The reports should incorporate headings that neatly divide the text into appropriate sections. They should also use a 12-point font, as anything smaller makes it difficult for some members of the public to read. The overall flow (i.e. logical layout) of the report was also weighted heavily in the evaluations.

6. Statements About Public Health and Safety

This category is divided into two sections. First, the Ontario government should follow the example of the U.S. experience with "consumer confidence reports (CCR)" by requiring a warning statement for vulnerable populations.[6] Vulnerable populations include:

- people undergoing chemotherapy or living with HIV/AIDS
- infants and young children
- pregnant women and their fetuses
- the frail elderly
- transplant patients

Certain states, such as New Jersey, further require water providers to prominently display warning statements for vulnerable populations in the CCR. The Ontario quarterly reports were thus evaluated according to these stringent standards.

Second, the Ontario reports were judged for their appropriate usage of statements of safety. In general, water providers should refrain from characterizing their water as being outright "safe". They can still effectively communicate the same message by using other language, such as "Your water meets/exceeds provincial standards." Blanket statements of safety can be misleading for several reasons:

- the drinking water standards do not always consider health impacts on vulnerable populations;
- water providers are not required to monitor for some important contaminants, including infectious parasites and many pesticides;
- the standards for some parameters, such as trichloroethylene, are outdated, and
- when setting standards, consideration is given to treatment costs and available technology in addition to health impacts.

[6] Refer to Appendix D for the language required by the U.S. EPA.

Nonetheless, water providers were not penalized in this evaluation for making statements of safety, unless those statements were clearly inappropriate (e.g. if a statement of safety was made in spite of a violation of a drinking water standard) or unless the term was used repeatedly.

Reports should also include a statement about how some contaminants may reasonably be expected to be found in drinking water, including bottled water, and that the presence of such contaminants in small quantities does not necessarily pose a health risk.[7]

7. Information on Opportunities for Public Input and Participation

The information included in this section is essential for engaging the public and addressing citizens' concerns and interests. First, a telephone number should be provided for the public to call with pending questions.

Second, the report should include a section requesting public input on the report. Soliciting feedback is an effective means for water providers to determine the strengths and weaknesses of their reports, as well as what information the public would like to see in the reports.

Finally, the reports should include some information on upcoming meetings and events pertaining to drinking water, such as Works Committee meetings, Drinking Water Week, etc. at which the public can learn more about their water or participate in the decision-making process.

8. Violations of Standards

If an Ontario drinking water standard (i.e. a health standard, an indicator of adverse water quality, sampling requirement, or treatment requirement) is violated, water providers should provide a clear and understandable explanation of:

- what standard was violated and why;
- the length of the violation (or the dates of when the problem was detected and resolved);
- the corrective action taken, and
- a description of the potential health effects.

The public requires this information in order to have a comprehensive understanding of the types of drinking water problems that may affect them.

B. Promotion and Accessibility

1. Efforts Taken to Advertise the Reports

Water providers in Ontario are not required to put their drinking water reports directly into the hands of consumers. The usefulness of these reports is thus contingent upon public awareness of

[7] Refer to Appendix E for sample language prescribed by the U.S. EPA.

their existence. Effective promotion should incorporate more than one method of advertising, as no one method is capable of reaching all members of the public. The use of three or more methods is ideal.

Depending on the size of the community, different methods of advertisement may prove effective for different cities or towns. Nonetheless, efforts taken to promote the availability of these reports were divided into "core" and "peripheral" media for communication. Some core media for advertising the availability of these reports include:

- newspapers
- radio
- television
- water bills
- newsletters
- public transit
- hand-delivered notices
- the home page of the City/Region's web site

Points were awarded only for the use of the core media described above. Peripheral media, which includes water brochures (that are not delivered to the public), mall displays, messages on city hotlines and others, were noted but not awarded points.

2. Accessibility of the Reports

All of the water providers evaluated in this study must make copies of their quarterly reports available to the public at a reasonably convenient location both in the city and online. The Internet, in particular, is very effective in allowing members of the public, some of whom drink water from more than one water provider, to easily access the reports in a timely manner.

Evaluation of the online accessibility of these reports is based upon three criteria:

- whether the report is easy to find;
- whether the current report is posted on the Internet, and
- whether past reports are posted on the Internet.

However, as many Ontarians do not have regular access to the Internet, it is important that water providers continue to make these reports available in hard copy form at convenient locations around the city.

5. MEASURING UP

5.1 General Findings

The Ontario drinking water reports evaluated for this study demonstrate good initial efforts by water providers. Nonetheless, much improvement is needed. The absence of clear content requirements in the *Drinking Water Protection Regulation* (DWPR) has resulted in significant discrepancies in the type, quality, and quantity of information included in these reports. Moreover, although accessibility is generally good, promotion of these reports using core media is very limited.

The overall grade for each report is based upon two individual grades: one for content, and another for promotion and accessibility. The average and range of grades is as follows:

	OVERALL	CONTENT	PROMOTION & ACCESSIBILITY
Average	**C**	C-	B-
Range	**D to B+**	D to B	D to A+

The overall grade was ascertained by averaging the letter grades for the "Content" and Promotion & Accessibility" categories.

Overall Strengths

A. **Most reports made appropriate statements of safety.** Although some reports made frequent use of the word "safe," only one (Thunder Bay) did so inappropriately. Water providers should generally refrain from using statements such as "Your water is safe," as it can be misleading.[8]

B. **Most reports are easily accessible.** With the exception of Ottawa, all cities post their current reports on the Internet. Most are easy to find and list archived reports. As well, all water providers make their reports readily available to the public in a reasonably convenient location in their respective cities.

C. **All reports include contact information.** This information is essential so that the public can easily contact the water providers with questions about the report or their water quality without being passed back and forth from one city department to another.

[8] Refer to Chapter 4(A)(5) for further discussion of this matter.

Overall Weaknesses

A. **Most municipalities are generally not undertaking adequate efforts to effectively advertise the availability of their reports to the public.** Four of the ten reports failed this section of the evaluation, and two others barely passed. With the exceptions of Hamilton and Kingston, water providers are not sufficiently using core media to advertise their reports.

B. **None of the reports include a prominently displayed warning statement for vulnerable populations.** Only Windsor included such a statement in its report, using most of the text prescribed by the U.S. EPA. However, the statement was not prominently displayed in the report.

C. **Many reports do not provide a comprehensive description of efforts taken to comply with the DWPR.** Six of the ten reports reviewed did not mention that all sampling results are available to the public, and five reports did not make any reference to the new notification protocol under the DWPR.

D. **Most reports do not include information on opportunities for public input and participation.** Notices of upcoming meetings or events, and requests for feedback on the report are generally missing. Drinking water reports can serve as a useful medium for notifying the public about Public Works meetings and for learning what community members would like to see in the reports.

E. **The summary tables in many reports list the test results for all parameters rather than just detected contaminants.** Half of the summary tables in the reports reviewed listed the sampling results for all parameters. These tables are overwhelming and confusing, likely deterring many readers from continuing to read and fully understand the report.

F. **Most reports do not provide a brief written description of the summary table.** A description of the results of the summary table is very useful, particularly for individuals who may find the technical names, units of measurement, and numbers (often in decimal places) somewhat confusing. The Ottawa and Toronto reports are good examples of the effectiveness of written summaries.

G. **Most reports do not adequately describe the location of the water intake.** Simply stating that the water source for a community system is Lake Ontario does not provide the reader with enough information. Rather, the report should state precisely where the intake pipe is located. The Kingston report provides a good example of how this information can be summarized in a concise manner. Including a map indicating the location of the treatment plant(s) is also useful.

H. Many reports do not describe the types of contaminants that may be found in raw water or include a statement about how contaminants may reasonably be expected to be found in drinking water. Four of the ten reports did not include either of these pieces of information.

5.2 Report Cards

The individual evaluations of the ten cities are presented on the following pages. It is important to note that a low score does not necessarily mean that a report has no redeeming qualities. Rather, the grades reflect the inclusion of content that is necessary to provide consumers with a comprehensive understanding of their drinking water, as well as effective efforts to promote these reports and make them readily accessible to the public.

HAMILTON

DRINKING WATER REPORT EVALUATION

Content:
C+
Promotion &

CONTENT

CRITERIA	POINTS AVAILABLE	HAMILTON'S SCORE	GROUP AVERAGE
Information on the Source & Intake	15	**11**	9.9
Efforts Taken to Comply w/ DWPR	10	**10**	7.2
Summary Table of Contaminants	10	**10**	7.4
Readability: Language & Content	15	**9**	10.4
Readability: Format	10	**7**	7.6
Statements About Health & Safety	15	**7**	6.4
Opportunities for Public Input & Participation	10	**5**	4.9
Information Concerning Violations (if applicable)	15	**9**	9.3
TOTAL	100	**68**	-
%	100%	**68%**	63%

PROMOTION & ACCESSIBILITY

CRITERIA	POINTS AVAILABLE	HAMILTON'S SCORE	GROUP AVERAGE
Efforts Taken to Advertise the Reports	60	**60**	36.0
Accessibility of the Reports	40	**40**	37.8
TOTAL	100	**100**	73.8
%	100%	**100%**	73.8%

COMMENTS

STRENGTHS

- efforts taken to advertise the availability of the reports – one of the best of the reports evaluated
- additional information on lead – only report to include this
- easy-to-understand summary table
- concise and well presented "ODWS Compliance" section
- information about the quantity of water supplied versus design capacity
- concise description of the treatment process

WAYS TO IMPROVE REPORTING

$ include a prominently displayed warning statement for vulnerable populations
$ include information about the potential hazards from exceedances of indicators of adverse water quality; also include the resample dates

- include a brief written summary of the water quality table that describes the results for all categories of parameters (not just ones with exceedances)
- in the description of the source water, include the precise location of the intake pipes, as well as a statement about contaminants which may reasonably be expected to be found in drinking water, including bottled water
- include information on opportunities for public participation, such as listing upcoming meetings and soliciting feedback from the public about what they want to see in the reports

KINGSTON

DRINKING WATER REPORT EVALUATION

Content:
B-
Promotion &

CONTENT

CRITERIA	POINTS AVAILABLE	KINGSTON'S SCORE	GROUP AVERAGE
Information on the Source & Intake	15	**13**	9.9
Efforts Taken to Comply w/ DWPR	10	**4**	7.2
Summary Table of Contaminants	10	**10**	7.4
Readability: Language & Content	15	**11**	10.4
Readability: Format	10	**9**	7.6
Statements About Health & Safety	15	**9**	6.4
Opportunities for Public Input & Participation	10	**4**	4.9
Information Concerning Violations (if applicable)	N/A	**N/A**	9.3
TOTAL	85	**60**	-
%	100%	**71%**	63.1%

PROMOTION & ACCESSIBILITY

CRITERIA	POINTS AVAILABLE	KINGSTON'S SCORE	GROUP AVERAGE
Efforts Taken to Advertise the Reports	60	**60**	36.0
Accessibility of the Reports	40	**40**	37.8
TOTAL	100	**100**	73.8
%	100%	**100%**	73.8%

COMMENTS

STRENGTHS

- efforts taken to advertise the availability of the reports – one of the best of the reports evaluated
- clear and concise description of the source water
- clean layout (flows well)
- clean and concise summary table
- statement of additional Certificate of Approval requirements
- diagram of the purification and distribution process
- "Question and Answer" format at the end of the report
- information about additional characteristics of water (hardness, pH, colour, etc.)
- specific contact name

WAYS TO IMPROVE REPORTING

$ include a prominently displayed warning statement for vulnerable populations
$ mention additional efforts taken to comply with the Regulation, such as the use of accredited labs and licensed operators, availability of all sampling results for the public, and the notification protocol
$ include a brief written description of the summary table
- include information on opportunities for public participation, such as listing upcoming meetings and soliciting feedback from the public about what they want to see in the reports
- include a statement about contaminants which may reasonably be expected to be found in drinking water, including bottled water

LONDON D

DRINKING WATER REPORT EVALUATION

Content: **D**
Promotion & Accessibility: **D**

CONTENT

CRITERIA	POINTS AVAILABLE	LONDON'S SCORE	GROUP AVERAGE
Information on the Source & Intake	15	**6**	9.9
Efforts Taken to Comply w/ DWPR	10	**10**	7.2
Summary Table of Contaminants	10	**10**	7.4
Readability: Language & Content	15	**9**	10.4
Readability: Format	10	**4**	7.6
Statements About Health & Safety	15	**5**	6.4
Opportunities for Public Input & Participation	10	**4**	4.9
Information Concerning Violations (if applicable)	15	**6**	9.3
TOTAL	100	**54**	-
%	100%	**54%**	63.1%

PROMOTION & ACCESSIBILITY

CRITERIA	POINTS AVAILABLE	LONDON'S SCORE	GROUP AVERAGE
Efforts Taken to Advertise the Reports	60	**20**	36.0
Accessibility of the Reports	40	**36**	37.8
TOTAL	100	**56**	73.8
%	100%	**56%**	73.8%

COMMENTS

STRENGTHS

$ clean and concise summary table
$ specific contact names included in the introduction

WAYS TO IMPROVE REPORTING

- use additional core media to advertise the availability of the reports
$ include a prominently displayed warning statement for vulnerable populations
- be more specific in describing the nature of exceedances, and include the length of the exceedance and potential health effects
- include information on opportunities for public participation, such as listing upcoming meetings and soliciting feedback from the public about what they want to see in the reports
- include a written description of all categories listed in the summary table (not just violations)
- include more detailed information about the location of the intake for the two treatment plants
- include a statement about contaminants which may reasonably be expected to be found in drinking water (including bottled water), as well as the types of contaminants that may be found in source water
- group the compliance information under one heading
- improve the layout by highlighting important information and ensuring that information listed under a heading pertains to the heading (e.g. “Water Source” section includes treatment information and source water information)
- post an archive of past reports on the Internet, as required under the DWPR

OSHAWA C

DRINKING WATER REPORT EVALUATION

Content:
C-
Promotion &

CONTENT

CRITERIA	POINTS AVAILABLE	OSHAWA'S SCORE	GROUP AVERAGE
Information on the Source & Intake	15	**12**	9.9
Efforts Taken to Comply w/ DWPR	10	**6**	7.2
Summary Table of Contaminants	10	**5**	7.4
Readability: Language & Content	15	**10**	10.4
Readability: Format	10	**7**	7.6
Statements About Health & Safety	15	**7**	6.4
Opportunities for Public Input & Participation	10	**4**	4.9
Information Concerning Violations (if applicable)	N/A	**N/A**	9.3
TOTAL	85	**51**	-
%	100%	**60%**	63.1%

PROMOTION & ACCESSIBILITY

CRITERIA	POINTS AVAILABLE	OSHAWA'S SCORE	GROUP AVERAGE
Efforts Taken to Advertise the Reports	60	**34**	36.0
Accessibility of the Reports	40	**38**	37.8
TOTAL	100	**72**	73.8
%	100%	**72%**	73.8%

COMMENTS

STRENGTHS

- structure of the summary table (but not the listing of all parameters)
- map for the Region of Durham that allows users to target their water system
- links to the Drinking Water Protection Regulation and the Ontario Drinking Water Standards
- brief history of the treatment plant

WAYS TO IMPROVE REPORTING

- use additional core media (such as water bill inserts or advertisements on public transit) to advertise the availability of the reports
- include a prominently displayed warning statement for vulnerable populations
- include the typical source of contaminants in the summary table
- include only detected contaminants in the summary table
- provide a brief written explanation of the summary table
- include information on opportunities for public participation, such as listing upcoming meetings and soliciting feedback from the public about what they want to see in the reports
- include a statement about how contaminants may reasonably be expected to be found in drinking water, including bottled water
- include headings in the Oshawa plant report to allow readers to easily navigate through the report
- make the report more easily accessible from the City of Oshawa web site

OTTAWA

DRINKING WATER REPORT EVALUATION

Content:
B
Promotion &

CONTENT

CRITERIA	POINTS AVAILABLE	OTTAWA'S SCORE	GROUP AVERAGE
Information on the Source & Intake	15	**11**	9.9
Efforts Taken to Comply w/ DWPR	10	**10**	7.2
Summary Table of Contaminants	10	**3**	7.4
Readability: Language & Content	15	**15**	10.4
Readability: Format	10	**8**	7.6
Statements About Health & Safety	15	**6**	6.4
Opportunities for Public Input & Participation	10	**7**	4.9
Information Concerning Violations (if applicable)	15	**14**	9.3
TOTAL	100	**74**	-
%	100%	**74%**	63.1%

PROMOTION & ACCESSIBILITY

CRITERIA	POINTS AVAILABLE	OTTAWA'S SCORE	GROUP AVERAGE
Efforts Taken to Advertise the Reports	60	**34**	36.0
Accessibility of the Reports	40	**28**	37.8
TOTAL	100	**62**	73.8
%	100%	**62%**	73.8%

COMMENTS

STRENGTHS

- identification of major polluters in describing the source water
- map identifying the location of the treatment plants
- written description of the summary table
- description of corrective action for exceedances
- clear and concise description of efforts taken to comply with the (presented under a separate heading)
- statement at the outset requesting public input
- summary table about water production
- information on other available publications by City of Ottawa

WAYS TO IMPROVE REPORTING

- use additional core media to advertise the availability of the reports
- include a prominently displayed warning statement for vulnerable populations
- post the current report on the Internet
- include only detected contaminants in the summary table, not all parameters
- include the range of results detected in the summary table, not just the average
- include the typical source of the contaminants in the summary table
- use a larger font size for the summary table
- include information on upcoming meetings (e.g. Works Department) and events
- include a statement about contaminants which may reasonably be expected to be found in drinking water, including bottled water, as well as the types of contaminants that may be found in source water

ST. CATHARINES

DRINKING WATER REPORT EVALUATION

Content:
D+
Promotion &

CONTENT

CRITERIA	POINTS AVAILABLE	ST. CATHARINES' SCORE	GROUP AVERAGE
Information on the Source & Intake	15	**6**	9.9
Efforts Taken to Comply w/ DWPR	10	**6**	7.2
Summary Table of Contaminants	10	**10**	7.4
Readability: Language & Content	15	**9**	10.4
Readability: Format	10	**8**	7.6
Statements About Health & Safety	15	**5**	6.4
Opportunities for Public Input & Participation	10	**4**	4.9
Information Concerning Violations (if applicable)	15	**10**	9.3
TOTAL	100	**58**	-
%	100%	**58%**	63.1%

PROMOTION & ACCESSIBILITY

CRITERIA	POINTS AVAILABLE	ST. CATHARINES' SCORE	GROUP AVERAGE
Efforts Taken to Advertise the Reports	60	**40**	36.0
Accessibility of the Reports	40	**40**	37.8
TOTAL	100	**80**	73.8
%	100%	**80%**	73.8%

COMMENTS

STRENGTHS

$ clean and concise summary table
$ description of the corrective action is generally good (except for the absence of the potential hazards from the exceedances of indicators of adverse water quality)
$ specific contact names

WAYS TO IMPROVE REPORTING

- use additional core media to advertise the availability of the reports
- include a prominently displayed warning statement for vulnerable populations
- include a brief written description of the summary table
- for exceedances, include the potential health effects and the notification protocol that was followed
- mention additional efforts taken to comply with the Regulation, such as the use of accredited labs and licensed operators, the availability of all sampling results to the public, and the notification protocol
- include information on opportunities for public participation, such as listing upcoming meetings and soliciting feedback from the public about what they want to see in the reports
- include more specific information about the source water, such as a statement about contaminants which may reasonably be expected to be found in drinking water (including bottled water), as well as the types of contaminants that may be found in source water

$ include the precise location of the intake pipes
$ display the contact information more prominently, perhaps at the outset of the report

SUDBURY (WANAPITEI) C

DRINKING WATER REPORT EVALUATION

Content: D
Promotion & Accessibility: B

CONTENT

CRITERIA	POINTS AVAILABLE	SUDBURY'S SCORE	GROUP AVERAGE
Information on the Source & Intake	15	**8**	9.9
Efforts Taken to Comply w/ DWPR	10	**6**	7.2
Summary Table of Contaminants	10	**9**	7.4
Readability: Language & Content	15	**8**	10.4
Readability: Format	10	**7**	7.6
Statements About Health & Safety	15	**6**	6.4
Opportunities for Public Input & Participation	10	**4**	4.9
Information Concerning Violations (if applicable)	N/A	**N/A**	9.3
TOTAL	85	**48**	-
%	100%	**56%**	63.1%

PROMOTION & ACCESSIBILITY

CRITERIA	POINTS AVAILABLE	SUDBURY'S SCORE	GROUP AVERAGE
Efforts Taken to Advertise the Reports	60	**40**	36.0
Accessibility of the Reports	40	**38**	37.8
TOTAL	100	**78**	73.8
%	100%	**78%**	73.8%

COMMENTS

STRENGTHS

$ description of the quality of the source water and possible sources of contamination
$ availability of a French version of the report
$ clean and concise summary table

WAYS TO IMPROVE REPORTING

- use additional core media to advertise the availability of the reports
- include a prominently displayed warning statement for vulnerable populations
- mention additional efforts taken to comply with the Regulation, including the availability of all sampling results to the public, and the notification protocol
- provide a brief written description of the summary table
- include information on opportunities for public participation, such as listing upcoming meetings and soliciting feedback from the public about what they want to see in the reports
- include a statement about how contaminants may reasonably be expected to be found in drinking water (including bottled water), as well as the types of contaminants that may be found in source water
- provide the precise location of the intake pipes for the treatment plants

$ post all archived reports on one web site (i.e. not all archived reports are currently on the same site)

THUNDER BAY

DRINKING WATER REPORT EVALUATION

Content:
C-
Promotion &

CONTENT

CRITERIA	POINTS AVAILABLE	THUNDER BAY'S SCORE	GROUP AVERAGE
Information on the Source & Intake	15	**10**	9.9
Efforts Taken to Comply w/ DWPR	10	**6**	7.2
Summary Table of Contaminants	10	**7**	7.4
Readability: Language & Content	15	**12**	10.4
Readability: Format	10	**9**	7.6
Statements About Health & Safety	15	**4**	6.4
Opportunities for Public Input & Participation	10	**4**	4.9
Information Concerning Violations (if applicable)	15	**9**	9.3
TOTAL	100	**61**	-
%	100%	**61%**	63.1%

PROMOTION & ACCESSIBILITY

CRITERIA	POINTS AVAILABLE	THUNDER BAY'S SCORE	GROUP AVERAGE
Efforts Taken to Advertise the Reports	60	**26**	36.0
Accessibility of the Reports	40	**40**	37.8
TOTAL	100	**66**	73.8
%	100%	**66%**	73.8%

COMMENTS

STRENGTHS

- clean and simple layout (facilitates easy navigation of the report)
- separate summary tables for separate treatment plants
- diagram of the treatment process
- link to the most recent Drinking Water Surveillance Program report

$ list of contact names and information

WAYS TO IMPROVE REPORTING

- use additional core media to advertise the availability of the reports
- refrain from describing the water as “safe,” as the report indicates an exceedance of a health standard (THM)
- include a prominently displayed warning statement for vulnerable populations
- include the potential health effects for exceedances
- mention additional efforts taken to comply with the Regulation, including the availability of all sampling results, and the notification protocol
- include only detected contaminants in the summary table
- provide a written description of the results presented in the summary table
- include information on opportunities for public participation, such as listing upcoming meetings and soliciting feedback from the public about what they want to see in the reports
- include a statement about how contaminants may reasonably be expected to be found in drinking water, including bottled water
- include the precise location of the intake pipe

TORONTO C

DRINKING WATER REPORT EVALUATION

Content:
C+
Promotion &

CONTENT

CRITERIA	POINTS AVAILABLE	TORONTO'S SCORE	GROUP AVERAGE
Information on the Source & Intake	15	**12**	9.9
Efforts Taken to Comply w/ DWPR	10	**10**	7.2
Summary Table of Contaminants	10	**6**	7.4
Readability: Language & Content	15	**13**	10.4
Readability: Format	10	**9**	7.6
Statements About Health & Safety	15	**6**	6.4
Opportunities for Public Input & Participation	10	**5**	4.9
Information Concerning Violations (if applicable)	15	**8**	9.3
TOTAL	100	**69**	-
%	100%	**69%**	63.1%

PROMOTION & ACCESSIBILITY

CRITERIA	POINTS AVAILABLE	TORONTO'S SCORE	GROUP AVERAGE
Efforts Taken to Advertise the Reports	60	**26**	36.0
Accessibility of the Reports	40	**40**	37.8
TOTAL	100	**66**	73.8
%	100%	**66%**	73.8%

COMMENTS

STRENGTHS

- information about trihalomethanes and their potential health effects
- written description of the summary table
- description of the source water
- clean layout and understandable language (i.e. not too technical)
- statement of new information (updates) in the report at the outset

WAYS TO IMPROVE REPORTING

- use additional core media to advertise the availability of the reports

$ include a prominently displayed warning statement for vulnerable populations

$ include the duration of exceedances, as well as the potential health effects (even for indicators of adverse water quality)

$ mention additional efforts taken to comply with the Regulation, including the availability of all sampling results to the public

$ list only detected contaminants in the summary table and include a column that clearly indicates exceedances

- include information on opportunities for public participation, such as listing upcoming meetings
- include a statement about how contaminants may reasonably be expected to be found in drinking water, including bottled water

WINDSOR

DRINKING WATER REPORT EVALUATION

Content:
C-
Promotion &

CONTENT

CRITERIA	POINTS AVAILABLE	WINDSOR'S SCORE	GROUP AVERAGE
Information on the Source & Intake	15	**10**	9.9
Efforts Taken to Comply w/ DWPR	10	**4**	7.2
Summary Table of Contaminants	10	**4**	7.4
Readability: Language & Content	15	**8**	10.4
Readability: Format	10	**8**	7.6
Statements About Health & Safety	15	**9**	6.4
Opportunities for Public Input & Participation	10	**8**	4.9
Information Concerning Violations (if applicable)	N/A	**N/A**	9.3
TOTAL	85	**51**	-
%	100%	**60%**	63.1%

PROMOTION & ACCESSIBILITY

CRITERIA	POINTS AVAILABLE	WINDSOR'S SCORE	GROUP AVERAGE
Efforts Taken to Advertise the Reports	60	**20**	36.0
Accessibility of the Reports	40	**38**	37.8
TOTAL	100	**58**	73.8
%	100%	**58%**	73.8%

COMMENTS

STRENGTHS

- warning statement for vulnerable populations
- information on upcoming Water Utilities Commission meetings

WAYS TO IMPROVE REPORTING

- use additional core media to advertise the availability of the reports
- prominently display the vulnerable populations warning
- refrain from making statements of safety followed by warnings for vulnerable populations; i.e. misleading (water may not be safe for everyone)
- mention additional efforts taken to comply with the Regulation, including the use of accredited labs and licensed operators, the availability of all sampling results to the public, and the notification protocol
- include only detected contaminants in the summary tables
- include operational parameters in the summary table(s), as well as the typical source of contaminants detected in the drinking water
- include a column in the summary tables that clearly indicates exceedances of standards
- include a brief written description of all the categories in the summary table
- place the information on upcoming meetings in a separate section
- include a comment, which is not buried in the text, that solicits public feedback on what they would like to see in the report
- include the types of contaminants that may be found in source water
- include the precise location of the intake pipes
- provide a link on the City of Windsor web site to the report

6. RECOMMENDATIONS

Despite the efforts made by these ten water providers, the results of this study demonstrate that a number of regulatory changes must be made to ensure effective public reporting about drinking water quality in Ontario. Our four general recommendations are:

- to maintain reporting every three months;
- to require an annual drinking water report;
- to establish clear content requirements for these reports, and
- put these reports directly into the hands of the public.

6.1 Maintain Reporting Every Three Months

It is important that water providers continue to deliver drinking water reports to the MOE every three months, and that this information be made readily available to the public. Water providers should not be relieved of this requirement until their drinking water quality data is presented in a database that can be easily accessed by the public.

> ***Recommendation 1:***
> Water providers should continue to generate drinking water reports every three months and effectively advertise their availability until the public can readily access the most current data on their drinking water through an online database.[9]

6.2 Require an Annual Drinking Water Report

Annual drinking water reports can provide citizens with a good snapshot of their drinking water and help them to understand basic, though essential, information, such as:

- where the water comes from;
- the contaminants it contains;
- whether the water provider has been complying with the DWPR, and
- the potential health hazards that exist.

As a result, individuals will have the fundamental information that is necessary to protect the health of their families and their environment.

> ***Recommendation 2:***
> Water providers should be required to produce an annual 'right-to-know (RTK) report' that contains information on the source and quality of water delivered by the system, and characterizes the risks, if any, from exposure to contaminants detected in the water or non-compliance with DWPR requirements.

[9] For more information on this issue, refer to the CEDF study entitled *Transparency, Reporting and Accountability*.

Recommendation 3:
Reports should be prepared and distributed by water providers that:

(a) supply more than 50,000 litres of water on at least 88 days in every 90-day period, or
(b) service more than five private residences.

Recommendation 4:
A water provider that sells water to another water provider should deliver a copy of the report to the (water providing) purchaser.

6.3 Establish Clear Content Requirements

The Ontario government must stipulate minimum content requirements for these annual drinking water RTK reports, which should include:

1. *Information about the source water, including its susceptibility to contamination*
Recommendation 5:
Reports should provide information on the source of the water delivered, including:
   (a) the type(s) of the water, such as groundwater, surface water, or ground water under the influence of surface water;
   (b) the commonly used name and location of the body (or bodies) of water;
   (c) the precise location of the intake pipe(s); and
   (d) the quality of the raw water, its susceptibility to contamination, and known or likely sources of contamination.[10]

2. *A table summarizing the test results for detected contaminants only*
Recommendation 6:
Reports should include information regarding contaminants detected in the system's drinking water at the point of entry into the system and throughout the distribution system.
   (a) This requirement applies to:
      (i) contaminants subject to a maximum acceptable concentration (MAC), interim maximum acceptable concentration (IMAC), aesthetic objective (AO), or treatment technique for regulated contaminants;
      (ii) any unregulated contaminants for which the water provider is required to monitor; and
      (iii) disinfection byproducts or microbial contaminants for which monitoring is required and which are detected in treated water.

[10] Refer to Appendix G for California's list of typical sources of contaminants.

(b) Information relating to Recommendation 6(a) should be displayed in one table or several adjacent tables. Any additional test or monitoring results should be displayed separately. If a water provider distributes water to its customers from more than one hydraulically independent distribution system fed by different raw water sources, water providers should:
   (i) include a separate column for each independent area serviced by the water provider in the summary table, or
   (ii) produce separate reports that include data for each service area.

(c) For detected regulated contaminants, the table(s) specified in Recommendation 6(b) should contain:
   (i) the MAC, IMAC, AO, or treatment technique applicable to the contaminant;
   (ii) the units of measurement;
   (iii) the highest contaminant level detected and the range of detected levels for contaminants subject to a MAC, IMAC, or AO;
   (iv) the known or typical source of the contaminant;[11] and
   (v) a clear indication of violations of health standards, indicators of adverse water quality, or treatment techniques.

3. Descriptions of the summary table(s)

Recommendation 7:

Reports should include a written description of the findings presented in the summary table. Water providers should include in the report a description of the testing results presented in the table outlined in Recommendation 6.

4. A description of violations of contaminant limits or standards, corrective action and potential health hazards

Recommendation 8:

If the water provider violates any standards set forth in the Ontario *Drinking Water Protection Regulation*, including health standards or indicators of adverse water quality, the system will include in the report a clear and readily understandable explanation of the violation, including:
   (a) the reason for the violation;
   (b) the duration of the violation;
   (c) the corrective action(s) being taken to properly comply with the *Regulation*, and
   (d) the health hazards resulting from non-compliance. [12]

5. A warning statement for vulnerable populations

Recommendation 9:

All reports should prominently display in bold font a warning statement for vulnerable populations prescribed by the Ontario government.[13]

[11] Refer to Appendix G for sample U.S. language.
[12] Refer to Appendix H for sample U.S. language.
[13] Refer to Appendix D for the required vulnerable populations statement in U.S. CCRs.

6. Information about opportunities for public input and participation

Recommendation 10:

Reports should include:

(a) information about opportunities for public participation in decisions that may affect the quality of the drinking water;
(b) information about opportunities for the public to learn more about their drinking water, and
(c) a prominently displayed statement requesting public feedback on the report, including a statement about what the public would like to see in the report.

7. Definitions of key terms and acronyms

Recommendation 11:

Reports should include, at a minimum, definitions of the following key terms:

(a) maximum acceptable concentration (MAC);
(b) interim maximum acceptable concentration (IMAC), and
(c) aesthetic objective (AO).

8. Information about efforts taken to comply with the DWPR

Recommendation 12:

Reports should include clear statements about the efforts taken by the water provider to comply with the Ontario *Drinking Water Protection Regulation*, including:

(a) treatment requirements;
(b) sampling requirements;
(c) use of accredited laboratories and licensed operators;
(d) availability of all sampling tests for the public to view;
(e) the notification protocol for non-compliance with the *Regulation*, and
(f) the water provider's certificate of approval requirements, if it includes variances or exemptions from the requirements specified in the *Regulation*.

9. Additional health information for lead and nitrate

Recommendation 13:

A system that detects nitrate at levels above 5 mg/l, but below the MAC, should include a short informational statement – prescribed by the Ontario government – about the impacts of nitrate on children.[14]

Recommendation 14:

Systems which detect lead above the MAC in more than 5 percent of homes sampled should include a short informational statement – prescribed by the Ontario government – about the special impact of lead on children.[15]

[14] Refer to Appendix D for the required language for nitrate in U.S. CCRs.
[15] Refer to Appendix D for the required language for lead in U.S. CCRs.

10. *A translated statement targeted at large non-English speaking populations*

Recommendation 15:

In communities with a large proportion (10 percent or more) of non-English speaking residents, the report should include:

(a) information in the appropriate language(s) regarding the importance of the report,[16] or

(b) a telephone number or address where such residents may contact the water provider to obtain a translated copy of the report.

11. *Contact information*

Recommendation 16:

Reports should include the telephone number of the owner, operator, or designee of the community as a source of additional information concerning the report.

12. *A statement about how it is reasonable to detect contaminants in drinking water*

Recommendation 17:

Reports should include a statement about how contaminants may reasonably be expected to be found in drinking water, including bottled water, and that the presence of such contaminants does not necessarily pose a health risk.[17]

6.4 Entrench Clear Delivery and Posting Requirements

The Ontario government should require water providers to mail or hand deliver an annual drinking water report to all addresses serviced by the water provider, regardless of whether a water bill is sent to that address (e.g. individuals living in apartment buildings). Water providers servicing more than 10,000 people should also be required to post their reports on the Internet, as is currently required under the DWPR. Moreover, additional posting requirements are needed for the following:

- hospitals;
- rehabilitation centres, extended care facilities, and nursing homes;
- child care centres, and
- public and non-public schools.

Reports should be posted in conspicuous places at each of these locations.

Recommendation 18:

Water providers should be required to mail or hand deliver an annual report to each resident within the area serviced by the provider.

[16] Refer to Appendix F for sample translated statements.
[17] Refer to Appendix E for required language in the U.S. for CCRs.

Recommendation 19:
If a water provider serves more than 10,000 people, the owner should ensure that a copy of every report is made available to the public for no charge on the Internet.

Recommendation 20:
The owner or operator of a hospital, child care centre, rehabilitation centre, extended care facility, skilled nursing home, or nursing home should post the most current report in at least one conspicuous location in the hospital, child care centre, rehabilitation centre, extended care facility, skilled nursing home or nursing home.

Recommendation 21:
The principal of every public and private school should post the most current report in a conspicuous location near each major entrance to the school.

Recommendation 22:
Water providers should deliver to the public, post on the Internet, and submit to the Minister of the Environment a copy of their report no later than July 1 of each year.

APPENDIX A:
SUMMARY TABLE OF REPORT EVALUATIONS

CRITERIA	POINTS	AVERAGE	RANGE	*HAMILTON*	*KINGSTON*	*LONDON*	*OSHAWA*
A. CONTENT							
1. Information on the Source Water and Intake	15	9.9	6 to 13	11	13	6	12
2. Efforts Taken to Comply with the Regulation	10	7.2	4 to 10	10	4	10	6
3. Summary Table of Contaminants	10	7.4	3 to 10	10	10	10	5
4. Readability: Language/Content	15	10.4	8 to 15	9	11	9	10
5. Readability: Format	10	7.6	4 to 9	7	9	4	7
6. Statements About Public Health and Safety	15	6.4	4 to 9	7	9	5	7
7. Information on Opportunities for Public Participation	10	4.9	4 to 7	5	4	4	4
8. Violations (only if applicable)	15	9.3	6 to 14	9	N/A	6	N/A
CONTENT TOTAL			N/A	68	60	54	51
Out of			N/A	100	85	100	85
%		63.11	54.00 to 74.00	68.00	70.59	54.00	60.00
Letter Grade		C-	D to B	C+	B-	D	C-
B. PROMOTION AND ACCESSIBILITY							
1. Efforts Taken to Publicize the Reports	60	36	20 to 60	60	60	20	34
2. Accessibility of Reports	40	37.8	28 to 40	40	40	36	38
PROMOTION AND ACCESSIBILITY TOTAL (and %)	100	73.8	56 to 100	100	100	56	72
Letter Grade		B-	D to A+	A+	A+	D	B-
OVERALL LETTER GRADE		C	D to B+	B+	B+	D	C
N/A = not applicable							

CRITERIA	POINTS	AVERAGE	RANGE	*OTTAWA*	*ST. CATHARINES*	*SUDBURY*
A. CONTENT						
1. Information on the Source Water and Intake	15	9.9	6 to 13	11	6	8
2. Efforts Taken to Comply with the Regulation	10	7.2	4 to 10	10	6	6
3. Summary Table of Contaminants	10	7.4	3 to 10	3	10	9
4. Readability: Language/Content	15	10.4	8 to 15	15	9	8
5. Readability: Format	10	7.6	4 to 9	8	8	7
6. Statements About Public Health and Safety	15	6.4	4 to 9	6	5	6
7. Information on Opportunities for Public Participation	10	4.9	4 to 7	7	4	4
8. Violations (only if applicable)	15	9.3	6 to 14	14	10	N/A
CONTENT TOTAL			N/A	47	58	48
Out of			N/A	100	100	85
%		63.11	54.00 to 74.00	74.00	58.00	56.47
Letter Grade		C-	B to D	B	D+	D
B. PROMOTION AND ACCESSIBILITY						
1. Efforts Taken to Publicize the Reports	60	36	20 to 60	34	40	40
2. Accessibility of Reports	40	37.8	28 to 40	28	40	38
PROMOTION AND ACCESSIBILITY TOTAL (and %)	100	73.8	56 to 100	62	80	78
Letter Grade		B-	D to A+	C-	A-	B+
OVERALL LETTER GRADE		C	D to B+	C+	C+	C
N/A = not applicable						

CRITERIA	POINTS	AVERAGE	RANGE	*THUNDER BAY*	*TORONTO*	*WINDSOR*
A. CONTENT						
1. Information on the Source Water and Intake	15	9.9	6 to 13	10	12	10
2. Efforts Taken to Comply with the Regulation	10	7.2	4 to 10	6	10	4
3. Summary Table of Contaminants	10	7.4	3 to 10	7	6	4
4. Readability: Language/Content	15	10.4	8 to 15	12	13	8
5. Readability: Format	10	7.6	4 to 9	9	9	8
6. Statements About Public Health and Safety	15	6.4	4 to 9	4	6	9
7. Information on Opportunities for Public Participation	10	4.9	4 to 7	4	5	8
8. Violations (only if applicable)	15	9.3	6 to 14	9	8	N/A
CONTENT TOTAL			N/A	61	68	51
Out of			N/A	100	100	85
%		63.11	54.00 to 74.00	61.00	69.00	60.00
Letter Grade		C-	D to B	C-	C+	C-
B. PROMOTION AND ACCESSIBILITY						
1. Efforts Taken to Publicize the Reports	60	36	20 to 60	26	26	20
2. Accessibility of Reports	40	37.8	28 to 40	40	40	38
PROMOTION AND ACCESSIBILITY TOTAL (and %)	100	73.8	56 to 100	66	66	58
Letter Grade		B-	D to A+	C	C	D+
OVERALL LETTER GRADE		C	D to B+	C-	C	D+
N/A = not applicable						

APPENDIX B:
SUMMARY TABLE OF EFFORTS TAKEN TO ADVERTISE THE REPORTS

CITY	INITIAL EFFORTS	ONGOING EFFORTS
Hamilton	*Core*: water bills, web site homepage, newspaper, television	*Core*: water bills, web site homepage, newspaper, television
	Peripheral:	*Peripheral*: copies sent to libraries, recreational centres, schools, and municipal service centres
Kingston	*Core*: radio, local newspapers (3), web site	*Core*: radio, local newspapers (3), web site homepage
	Peripheral:	*Peripheral*:
London	*Core*: water bill (insert)	*Core*: water bill (insert)
	Peripheral:	*Peripheral*: semi-annual newsletter lists a phone number for more info
Oshawa (Region of Durham)	*Core*: web site homepage	*Core*: web site homepage, semi-annual newsletter
	Peripheral: close relationship with media	*Peripheral*: mall displays for National Public Works Week; close relationship with media
Ottawa	*Core*: web site homepage	*Core*: web site homepage, newspaper ad for *annual* water quality report
	Peripheral:	*Peripheral*: water brochures (*Water Words*)
St. Catharines	*Core*: web site, newspaper	*Core*: web site, newspaper
	Peripheral:	*Peripheral*:
Sudbury (Region of Sudbury)	*Core*: web site, local newspaper	*Core*: web site, local newspaper
	Peripheral:	*Peripheral*: mall display during Drinking Water Week; publications at plant
Thunder Bay	*Core*: web site, newspaper	*Core*: web site, newspaper
	Peripheral:	*Peripheral*: city council
Toronto	*Core*: water bills	*Core*: newsletter
	Peripheral: press conference, hotline	*Peripheral*: hotline, city councillors
Windsor	*Core*: web site	*Core*: web site
	Peripheral: Committee meetings	*Peripheral*: Committee meetings

APPENDIX C:
SAMPLE DEFINITIONS

Key Definitions

(**source**: Ontario Ministry of the Environment, "Waterworks' quarterly reports for consumers," p.5)

MAC
Maximum Acceptable Concentration. This is a health-related Ontario drinking water standard established for contaminants that have known or suspected adverse health effects when above a certain concentration. the length of time the MAC can be exceeded without injury to health will depend on the nature and concentration of the parameter.

IMAC
Interim Maximum Acceptable Concentration. This is a health-related Ontario drinking water standard established for contaminants when there are insufficient toxicological data to establish a MAC with reasonable certainty, or when it is not practical to establish a MAC at the desired level.

Parameter
This is a substance that we sample and analyze for in the water.

mg/l
milligrams per litre. This is a measure of the concentration of a parameter in water, sometimes called parts per million (ppm).

Other Definitions

AO
Aesthetic Objective. This is a non-health related level established for parameters that are perceivable by the senses, such as colour, clarity, taste and odour.

NTU
Nephelometric Turbidity Unit. This is a unit of measurement for turbidity in a water sample.

APPENDIX D:
REQUIRED HEALTH STATEMENTS FOR CCRs

(**source**: U.S. EPA, National Primary Drinking Water Regulation: Consumer Confidence Reports; Final Rule. pp. 44529; < www.epa.gov/safewater/ccr/ccr-frne.html>)

U.S. National Primary Drinking Water Regulation

Section 141.154 Required additional health information.

(a) All reports must prominently display the following language: Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

(b) A system which detects arsenic at levels above 25 mg/ l, but below the MCL:
   (1) Must include in its report a short informational statement about arsenic, using language such as: EPA is reviewing the drinking water standard for arsenic because of special concerns that it may not be stringent enough. Arsenic is a naturally-occurring mineral known to cause cancer in humans at high concentrations.
   (2) May write its own educational statement, but only in consultation with the Primacy Agency.

(c) A system which detects nitrate at levels above 5 mg/l, but below the MCL:
   (1) Must include a short informational statement about the impacts of nitrate on children using language such as: Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advice from your health care provider.
   (2) May write its own educational statement, but only in consultation with the Primacy Agency.

(d) Systems which detect lead above the action level in more than 5%, but fewer that 10%, of homes sampled:
   (1) Must include a short informational statement about the special impact of lead on children using language such as: Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800-426-4791).
   (2) May write its own educational statement, but only in consultation with the Primacy Agency.

APPENDIX E:
ADDITIONAL STATEMENTS ABOUT DRINKING WATER REQUIRED FOR CCRs

(**source**: U.S. EPA, National Primary Drinking Water Regulation: Consumer Confidence Reports; Final Rule. pp. 44528-44529; < www.epa.gov/safewater/ccr/ccr-frne.html>)

U.S. National Primary Drinking Water Regulation

Section 141.153 Content of the Reports

(h) Additional information:

(1) The report must contain a brief explanation regarding contaminants which may reasonably be expected to be found in drinking water including bottled water. This explanation may include the language of paragraphs (h)(1) (i) through (iii) or systems may use their own comparable language. The report also must include the language of paragraph (h)(1)(iv) of this section.

(i) The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

(ii) Contaminants that may be present in source water include:

(A) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

(B) Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

(C) Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

(D) Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

(E) Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

(1) In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

(2) Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

APPENDIX F:
CALIFORNIA'S LIST OF TRANSLATIONS FOR CCRs

(**source**: California Department of Health Services, "Consumer Confidence Reports," [<www.dhs.cahwnet.gov/org/ps/ddwem/publications/CCR/ccrindex.htm>])

List of Translations for CCR

Pursuant to Section 64481(l), Chapter 15, Title 22, a utility's CCR is required to include the following sentence translated into Spanish and any language that is spoken by a non-English speaking group that exceeds 1,000 residents or 10% of the residents in a community.

> "This report contains important information about your drinking water. Translate it, or speak with someone who understands it."

For your use, the Department is providing as many translations as it is able to obtain. Some of these were provided by the Walnut Valley Utility District.

If a utility has a translation not available on this website that it would like to share with other utilities, please contact Alexis M. Milea at 510.540.2177 or amilea@dhs.ca.gov.

Spanish:
Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Hmong:
Daimntawv tshaj tawm no muaj lus tseemceeb txog koj cov dej haus. Tshab txhais nws, los yog tham nrog tej tug neeg uas totaub txog nws.

Tagalog:
Mahalaga ang impormasyong ito. Mangyaring ipasalin ito.

Farsi:
این اطلاعیه شامل اطلاعات مهمی راجع به آب آشامیدنی است. اگر نمیتوانید این اطلاعات را بزبان انگلیسی
بخوانید لطفا از کسی که میتواند یاری بگیرید تا مطالب را برای شما به فارسی ترجمه کند.

French:
Cé rapport contient des information importantes concernant votre eau potable. Veuillez traduire, ou parlez avec quelqu' un qui peut le comprendre.

Arabic:

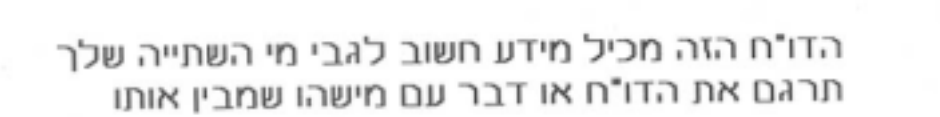
"هذا ألتقرير يحتوي على معلومآ ت مهّمة تتعلق بمياه ألشفة (أو ألشرب).
ترجم ألتقرير , أو تكلم مع شخص يستطيع أن يفهم ألتقرير."

Polish:
Ta broszura zawiera wazne informacje dotyczace jakosci wody do picia. Przetlumacz zawartosc tej broszury lub skontaktuj sie z osoba ktora pomoze ci w zrozumieniu zawartych informacji.

Russian:

Данный рапорт содержит важную информацию о вашей питьевой воде. Переведите его или проконсультируйтесь с тем, кто его понимает.

Hebrew:



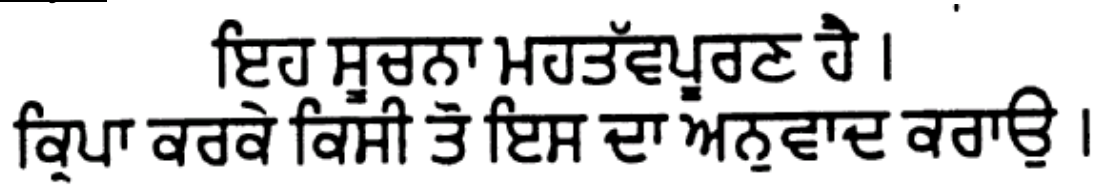
Chinese (Traditional):

此份有關你的食水報告,內有重要資料和訊息,請找他人為你翻譯及解釋清楚。

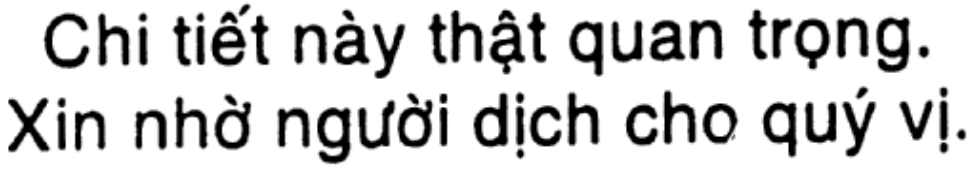
Chinese (Simplified)

此份有关你的食水报告,内有重要资料和讯息,请找他人为你翻译及解释清楚。

Punjabi



Vietnamese



Hindi

यह सूचना महत्वपूर्ण है ।
कृपा करके किसी से :सका अनुवाद करायें ।

Japanese

この情報は重要です。
翻訳を依頼してください。

Korean

이 안내는 매우 중요합니다.
본인을 위해 번역인을 사용하십시요.

Greek

Η κατοθεν αναφορα παρουσιαζη
σπουδαιες πληροφορειες για το
ποσιμο νερο σας. Πρακακλω να
το μεταφρασετε η να το
σξολειασετε με καποιον που το
καταλαβαινη απολητως.

Laotion

ລາຍງານນີ້ມີຂໍ້ມູນສຳຄັນກ່ຽວກັບນ້ຳປະປາຂອງທ່ານ. ຈົ່ງໃຫ້ຄົນອື່ນແປຄວາມໃຫ້ທ່ານ, ຫລືໃຫ້ປຶກສາກັບຄົນໃດຄົນໜຶ່ງທີ່ເຂົ້າໃຈເລື່ອງ.

Khamer

របាយការណ៍នេះមានពត៌មានសំខាន់អំពីទឹកបរិភោគ ។ សូមបកប្រែឬពិគ្រោះជាមួយអ្នកដែលមើលយល់របាយការណ៍នេះ ។

APPENDIX G:

CALIFORNIA'S LIST OF TYPICAL SOURCES OF CONTAMINANTS

(**source**: California Department of Health Services, "Small Water Systems – Consumer Confidence Reports," [<www.dhs.cahwnet.gov/org/ps/ddwem/publications/CCR/smallsystemsCCR.htm>])

ATTACHMENT 2

Information to Provide for Detected Chemicals & Constituents with PRIMARY DRINKING WATER STANDARDS					
Contaminant	**Unit Measurement**	**MCL**	**PHG**	**MCLG**	**Typical Source of Contaminant**
Microbiological Contaminants					
1. Total Coliform Bacteria	**MCL** (*systems that collect less than 40 samples per month*): More than 1 sample in a month with a detection; (*systems that collect more than 40 samples per month*): More than 5.0% of monthly samples are positive		N/A	0	Naturally present in the environment
2. Fecal coliform and *E.coli*	**MCL:** a routine sample and repeat sample detect total coliform, and one also detects fecal coliform or *E. coli*		N/A	0	Human and animal waste
3. Turbidity		TT	N/A	N/A	Soil runoff
Radioactive Contaminants					
4. Gross Beta Activity	pCi/L	50	N/A	0	Decay of natural and man-made deposits
5. Strontium 90	pCi/L	8	N/A	0	Decay of natural and man made deposits
6. Tritium	pCi/L	20,000	N/A	0	Decay of natural and man made deposits
7. Gross Alpha Activity	pCi/L	15	N/A	0	Erosion of natural deposits
8. Radium 226 & 228 (total)	pCi/L	5	N/A	0	Erosion of natural deposits
9. Uranium	pCi/L	20	N/A	0	Erosion of natural deposits
Inorganic Contaminants					
10. Aluminum	ppm	1	N/A	N/A	Erosion of natural deposits; residue from some surface water treatment processes
11. Antimony	ppb	6	20	N/A	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
12. Arsenic	ppb	50	N/A	N/A	Erosion of natural deposits; runoff from orchards; glass and electronics production wastes
13. Asbestos	MFL	7	N/A	7	Internal corrosion of asbestos cement water mains; erosion of natural deposits
14. Barium	ppm	1	N/A	2	Discharge of oil drilling wastes and from metal refineries; erosion of natural deposits
15. Beryllium	ppb	4	N/A	4	Discharge from metal refineries, coal-burning factories, and electrical, aerospace, and defense industries
16. Cadmium	ppb	5	.07	N/A	Internal corrosion of galvanized pipes; erosion of natural deposits; discharge from electroplating and industrial chemical factories and metal refineries; runoff from waste batteries and paints
17. Chromium	ppb	50	2.5	N/A	Discharge from steel and pulp mills and chrome plating; erosion of natural deposits
18. Copper	ppm	AL=1.3	0.17	N/A	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

Contaminant	Unit Measurement	MCL	PHG	MCLG	Typical Source of Contaminant
19. Cyanide	ppb	200	150	N/A	Discharge from steel/metal, plastic and fertilizer factories
20. Fluoride	ppm	2	1	N/A	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
21. Lead	ppb	AL=15	2	N/A	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits
22. Mercury (inorganic)	ppb	2	1.2	N/A	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
23. Nickel	ppb	100	N/A	100	Erosion of natural deposits; discharge from metal factories
24. Nitrate (as nitrate, NO_3)	ppm	45	45	N/A	Runoff and leaching from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
25. Nitrite (as nitrogen, N)	ppm	1	1	N/A	Runoff and leaching from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
26. Selenium	ppb	50	N/A	50	Discharge from petroleum, glass and metal refineries; erosion of natural deposits; discharge from mines and chemical manufacturers; runoff from livestock lots (feed additive)
27. Thallium	ppb	2	0.1	N/A	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories
Synthetic Organic Contaminants including Pesticides and Herbicides					
28. 2,4-D	ppb	70	70	N/A	Runoff from herbicide used on row crops
29. 2,4,5-TP [Silvex]	ppb	50	N/A	50	Residue of banned herbicide
30. Acrylamide		TT	N/A	0	Added to water during sewage/wastewater treatment
31. Alachlor	ppb	2	4	N/A	Runoff from herbicide used on row crops
32. Atrazine	ppb	3	0.15	N/A	Runoff from herbicide used on row crops and along railroad and highway right-of-ways
33. Bentazon	ppb	18	200	N/A	Runoff/leaching from herbicide used on beans, peppers, corn, peanuts, rice, and ornamental grasses
34. Benzo(a)pyrene (PAH)	ppt	200	4	N/A	Leaching from linings of water storage tanks and distribution mains
35. Carbofuran	ppb	18	1.7	N/A	Leaching of soil fumigant used on rice and alfalfa, and grape vineyards
36. Chlordane	ppt	100	30	N/A	Residue of banned insecticides
37. Dalapon	ppb	200	790	N/A	Runoff from herbicide used on rights- of-ways, and crops and landscape maintenance
38. Di(2-ethylhexyl) adipate	ppb	400	N/A	400	Discharge from chemical factories
39. Di(2-ethylhexyl) phthalate	ppb	4	12	N/A	Discharge from rubber and chemical factories; inert ingredient in pesticides
40. Dibromochloropropane [DBCP]	ppt	200	1.7	N/A	Banned nematocide that may still be present in soils due to runoff/leaching from former use on soybeans, cotton, vineyards, tomatoes, and tree fruit

Contaminant	Unit Measurement	MCL	PHG	MCLG	Typical Source of Contaminant
41. Dinoseb	ppb	7	14	N/A	Runoff from herbicide used on soybeans, vegetables, and fruits
42. Dioxin [2,3,7,8-TCDD]	ppq (parts per quadrillion)	30	N/A	0	Emissions from waste incineration and other combustion; discharge from chemical factories
43. Diquat	ppb	20	0.015	N/A	Runoff from herbicide use for terrestrial and aquatic weeds
44. Endothall	ppb	100	580	N/A	Runoff from herbicide use for terrestrial and aquatic weeds; defoliant
45. Endrin	ppb	2	1.8	N/A	Residue of banned insecticide and rodenticide
46. Epichlorohydrin		TT	N/A	0	Discharge from industrial chemical factories; impurity of some water treatment chemicals
47. Ethylene dibromide [EDB]	ppt	50	N/A	0	Discharge from petroleum refineries; underground gas tank leaks; banned nematocide that may still be present in soils due to runoff and leaching from grain and fruit crops
48. Glyphosate	ppb	700	1000	N/A	Runoff from herbicide use
49. Heptachlor	ppt	10	8	N/A	Residue of banned insecticide
50. Heptachlor epoxide	ppt	10	6	N/A	Breakdown of heptachlor
51. Hexachlorobenzene	ppb	1	N/A	0	Discharge from metal refineries and agricultural chemical factories and byproduct of chlorination reactions in wastewater
52. Hexachlorocyclopentadiene	ppb	50	50	N/A	Discharge from chemical factories
53. Lindane	ppt	200	32	N/A	Runoff/leaching from insecticide used on cattle, lumber, gardens
54. Methoxychlor	ppb	40	30	N/A	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
55. Molinate [Ordram]	ppb	20	N/A	N/A	Runoff/leaching from herbicide used on rice
56. Oxamyl [Vydate]	ppb	200	50	N/A	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
57. PCBs [Polychlorinated biphenyls]	ppt	500	N/A	0	Runoff from landfills; discharge of waste chemicals
58. Pentachlorophenol	ppb	1	0.4	N/A	Discharge from wood preserving factories
59. Picloram	ppb	500	500	N/A	Herbicide runoff
60. Simazine	ppb	4	N/A	4	Herbicide runoff
61. Thiobencarb	ppb	70	70	N/A	Runoff/leaching from herbicide used on rice
62. Toxaphene	ppb	3	N/A	0	Runoff/leaching from insecticide used on cotton and cattle
63. Benzene	ppb	1	N/A	0	Discharge from plastics, dyes and nylon factories; leaching from gas storage tanks and landfills
64. Carbon tetrachloride	ppt	500	100	N/A	Discharge from chemical plants and other industrial activities
65. 1,2-Dichlorobenzene [o-DCB]	ppb	600	600	N/A	Discharge from industrial chemical factories
66. 1,4-Dichlorobenzene [p-DCB]	ppb	5	6	N/A	Discharge from industrial chemical factories

Contaminant	Unit Measurement	MCL	PHG	MCLG	Typical Source of Contaminant
Volatile Organic Contaminants					
67. 1,1-Dichloroethane	ppb	5	N/A	N/A	Extraction and degreasing solvent; used in the manufacture of pharmaceuticals, stone, clay, and glass products; fumigant
68. 1,2-Dichloroethane	ppt	500	400	N/A	Discharge from industrial chemical factories
69. 1,1-Dichloroethylene	ppb	6	10	N/A	Discharge from industrial chemical factories
70. cis-1,2-Dichloroethylene	ppb	6	N/A	70	Discharge from industrial chemical factories
71. trans-1,2-Dichloroethylene	ppb	10	N/A	100	Discharge from industrial chemical factories; minor biodegradation byproduct of TCE and PCE groundwater contamination
72. Dichloromethane	ppb	5	4	N/A	Discharge from pharmaceutical and chemical factories; insecticide
73. 1,2-Dichloropropane	ppb	5	0.5	N/A	Discharge from industrial chemical factories; primary component of some fumigants
74. 1,3-Dichloropropene	ppt	500	200	N/A	Runoff/leaching from nematocide used on croplands
75. Ethylbenzene	ppb	700	300	N/A	Discharge from petroleum refineries; industrial chemical factories
76. Methyl-*tert*-butyl ether	0.013	13	13	N/A	Leakage from underground storage tanks and pipelines.
77. Monochlorobenzene	ppb	70	N/A	100	Discharge from industrial and agricultural chemical factories and dry cleaning facilities
78. Styrene	ppb	100	N/A	100	Discharge from rubber and plastic factories; leaching from landfills
79. 1,1,2,2-Tetrachloroethane	ppb	1	N/A	N/A	Discharge from industrial and agricultural chemical factories; solvent used in production of TCE, pesticides, varnish and lacquers
80. Tetrachloroethylene [PCE]	ppb	5	N/A	0	Leaching from PVC pipes; discharge from factories, dry cleaners and auto shops (metal degreaser)
81. 1,2,4-Trichlorobenzene	ppb	70	5	N/A	Discharge from textile-finishing factories
82. 1,1,1-Trichloroethane	ppb	200	N/A	200	Discharge from metal degreasing sites and other factories; manufacture of food wrappings
83. 1,1,2-Trichloroethane	ppb	5	N/A	3	Discharge from industrial chemical factories
84. Trichloroethylene [TCE]	ppb	5	.8	N/A	Discharge from metal degreasing sites and other factories
85. TTHMs [Total trihalomethanes]	ppb	100	N/A	N/A	By-product of drinking water chlorination
86. Toluene	ppb	150	150	N/A	Discharge from petroleum and chemical factories; underground gas tank leaks
87.Trichlorofluoromethane	ppb	150	700	N/A	Discharge from industrial factories; degreasing solvent; propellant and refrigerant
88. 1,1,2-Trichloro 1,2,2-trifluoroethane	ppm	1.2	4	N/A	Discharge from metal degreasing site and other factories; dry cleaning solvent; refrigerant
89. Vinyl Chloride	ppt	500	50	N/A	Leaching from PVC piping; discharge from plastics factories; biodegradation byproduct of TCE and PCE groundwater contamination
90. Xylenes	ppm	1.75	1.8	N/A	Discharge from petroleum and chemical factories; fuel solvent

ATTACHMENT 3

Information to Provide for Detected Chemicals with SECONDARY DRINKING WATER STANDARDS					
Contaminant	**Unit Measurement**	**MCL**	**PHG**	**MCLG**	**Typical Source of Contaminant**
Aluminum	ppb	200	N/A	N/A	Erosion of natural deposits; residual from some surface water treatment processes
Color	Units	15 units	N/A	N/A	Naturally-occurring organic materials
Copper	ppm	1.0	N/A	N/A	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Corrosivity	---	Non-corrosive	N/A	N/A	Natural or industrially-influenced balance of hydrogen, carbon and oxygen in the water; affected by temperature and other factors
Foaming Agents [MBAS]	ppb	500	N/A	N/A	Municipal and industrial waste discharges
Iron	ppb	300	N/A	N/A	Leaching from natural deposits; industrial wastes
Manganese	ppb	50	N/A	N/A	Leaching from natural deposits
Methyl-tert-butyl ether [MTBE]	ppb	5	N/A	N/A	Leaking underground storage tanks; discharge from petroleum and chemical factories
Odor--Threshold	Units	3 units	N/A	N/A	Naturally-occurring organic materials
Silver	ppb	100	N/A	N/A	Industrial discharges
Thiobencarb	ppb	1	N/A	N/A	Runoff/leaching from rice herbicide
Turbidity	Units	5 units	N/A	N/A	Soil runoff
Zinc	ppm	5.0	N/A	N/A	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids [TDS]	ppm	1000	N/A	N/A	Runoff/leaching from natural deposits
Specific Conductance	micromhos	1600	N/A	N/A	Substances that form ions when in water; seawater influence
Chloride	ppm	500	N/A	N/A	Runoff/leaching from natural deposits; seawater influence
Sulfate	ppm	500	N/A	N/A	Runoff/leaching from natural deposits' industrial wastes

Note: *There are no PHGs or MCLGs for constituents with secondary drinking water standards because these are not health-based levels, but set on the basis of aesthetics.*

APPENDIX H:
U.S. HEALTH EFFECTS LANGUAGE FOR CONTAMINANTS IN DRINKING WATER

(**source**: Public Notice Rule & Consumer Confidence Report Rule Tables, U.S. EPA,

<http://www.epa.gov/safewater/tables.html>)

Appendix B to Subpart Q of Part 141
Standard Health Effects Language for Public Notification

Contaminant	MCLG[1] mg/L	MCL[2] mg/L	Standard Health Effects Language for Public Notification
National Primary Drinking Water Regulations (NPDWR):			
A. Microbiological Contaminants			
1a. Total coliform	Zero	See footnote[3]	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
1b. Fecal coliform/*E. coli*	Zero	Zero	Fecal coliforms and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.
2a. Turbidity (MCL)[4]	None	1 NTU[5]/ 5 NTU	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
2b. Turbidity (SWTR TT)[6]	None	TT [7]	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
2c. Turbidity (IESWTR TT)[8]	None	TT	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
B. Surface Water Treatment Rule (SWTR) and Interim Enhanced Surface Water Treatment Rule (IESWTR)			
3. *Giardia lamblia* (SWTR/IESWTR) 4. Viruses (SWTR/IESWTR) 5. Heterotrophic plate count (HPC) bacteria[9] (SWTR/IESWTR) 6. Legionella (SWTR/IESWTR) 7. Cryptosporidium (IESWTR)	Zero	TT[10]	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
C. Inorganic Chemicals (IOCs)			
8. Antimony	0.006	0.006	Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.
9. Arsenic[11]	0	0.01	Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems

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			with their circulatory system, and may have an increased risk of getting cancer.
10. Asbestos (>10 μm)	7 MFL[12]	7 MFL	Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.
11. Barium	2	2	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
12. Beryllium	0.004	0.004	Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
13. Cadmium	0.005	0.005	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
14. Chromium (total)	0.1	0.1	Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
15. Cyanide	0.2	0.2	Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.
16. Fluoride	4.0	4.0	Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the MCL or more may cause mottling of children s teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining and/or pitting of the teeth, and occurs only in developing teeth, before they erupt from the gums.
17. Mercury (inorganic)	0.002	0.002	Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
18. Nitrate	10	10	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.
19. Nitrite	1	1	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.
20. Total Nitrate and Nitrite	10	10	Infants below the age of six months who drink water containing nitrate and nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
21. Selenium	0.05	0.05	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.
22. Thallium	0.0005	0.002	Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.

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D. Lead and Copper Rule			
23. Lead	Zero	TT[13]	Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.
24. Copper	1.3	TT[14]	Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson s Disease should consult their personal doctor.
E. Synthetic Organic Chemicals (SOCs)			
25. 2,4-D	0.07	0.07	Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.
26. 2,4,5-TP (Silvex)	0.05	0.05	Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
27. Alachlor	Zero	0.002	Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
28. Atrazine	0.003	0.003	Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
29. Benzo(a)pyrene (PAHs)	Zero	0.0002	Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
30. Carbofuran	0.04	0.04	Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
31. Chlordane	Zero	0.002	Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver, or nervous system, and may have an increased risk of getting cancer.
32. Dalapon	0.2	0.2	Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
33. Di (2-ethylhexyl) adipate	0.4	0.4	Some people who drink water containing di (2-ethylhexyl) adipate well in excess of the MCL over many years could experience general toxic effects or reproductive difficulties.
34. Di(2-ethylhexyl) phthalate	Zero	0.006	Some people who drink water containing di (2-ethylhexyl) phthalate in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
35. Dibromochloropropane (DBCP)	Zero	0.0002	Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive difficulties

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Contaminant	MCLG[1] mg/L	MCL[2] mg/L	Standard Health Effects Language for Public Notification
			and may have an increased risk of getting cancer.
36. Dinoseb	0.007	0.007	Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
37. Dioxin (2,3,7,8-TCDD)	Zero	$3H10^{-8}$	Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
38. Diquat	0.02	0.02	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
39. Endothall	0.1	0.1	Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.
40. Endrin	0.002	0.002	Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
41. Ethylene dibromide	Zero	0.00005	Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.
42. Glyphosate	0.7	0.7	Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.
43. Heptachlor	Zero	0.0004	Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.
44. Heptachlor epoxide	Zero	0.0002	Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.
45. Hexachlorobenzene	Zero	0.001	Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.
46. Hexachlorocyclo-pentadiene	0.05	0.05	Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.
47. Lindane	0.0002	0.0002	Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.
48. Methoxychlor	0.04	0.04	Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
49. Oxamyl (Vydate)	0.2	0.2	Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects.
50. Pentachlorophenol	Zero	0.001	Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of

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Contaminant	MCLG[1] mg/L	MCL[2] mg/L	Standard Health Effects Language for Public Notification
			getting cancer.
51. Picloram	0.5	0.5	Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
52. Polychlorinated biphenyls (PCBs)	Zero	0.0005	Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
53. Simazine	0.004	0.004	Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.
54. Toxaphene	Zero	0.003	Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer.
F. Volatile Organic Chemicals (VOCs)			
55. Benzene	Zero	0.005	Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.
56. Carbon tetrachloride	Zero	0.005	Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
57. Chlorobenzene (monochlorobenzene)	0.1	0.1	Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.
58. *o*-Dichlorobenzene	0.6	0.6	Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.
59. *p*-Dichlorobenzene	0.075	0.075	Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.
60. 1,2-Dichloroethane	Zero	0.005	Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
61. 1,1-Dichloroethylene	0.007	0.007	Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
62. *cis*-1,2-Dichloroethylene	0.07	0.07	Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
63. *trans*-1,2-Dichloroethylene	0.1	0.1	Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
64. Dichloromethane	Zero	0.005	Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.
65. 1,2-Dichloropropane	Zero	0.005	Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of

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Contaminant	MCLG[1] mg/L	MCL[2] mg/L	Standard Health Effects Language for Public Notification
			getting cancer.
66. Ethylbenzene	0.7	0.7	Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
67. Styrene	0.1	0.1	Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.
68. Tetrachloroethylene	Zero	0.005	Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.
69. Toluene	1	1	Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
70. 1,2,4-Trichlorobenzene	0.07	0.07	Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.
71. 1,1,1-Trichloroethane	0.2	0.2	Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.
72. 1,1,2-Trichloroethane	0.003	0.005	Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
73. Trichloroethylene	Zero	0.005	Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
74. Vinyl chloride	Zero	0.002	Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
75. Xylenes (total)	10	10	Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.
G. Radioactive Contaminants			
76. Beta/photon emitters	Zero	4 mrem/yr[1] [5]	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.
77. Alpha emitters (Gross alpha)	Zero	15 pCi/L[16]	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
78. Combined radium (226 & 228)	Zero	5 pCi/L	Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.
79. Uranium[17]	zero	30 Φg/l	Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer and kidney toxicity.

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Contaminant	MCLG[1] mg/L	MCL[2] mg/L	Standard Health Effects Language for Public Notification
H. Disinfection Byproducts (DBPs), Byproduct Precursors, and Disinfectant Residuals: Where disinfection is used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes (THMs) and haloacetic acids (HAAs).[18]			
80. Total trihalomethanes (TTHMs)	N/A	0.10/ 0.080[19,20]	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.
81. Haloacetic Acids (HAA)	N/A	0.060[21]	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
82. Bromate	Zero	0.010	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
83. Chlorite	0.08	1.0	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
84. Chlorine	4 (MRDLG)[22]	4.0 (MRDL)[23]	Some people who use drinking water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
85. Chloramines	4 (MRDLG)	4.0 (MRDL)	Some people who use drinking water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
86a. Chlorine dioxide, where any 2 consecutive daily samples taken at the entrance to the distribution system are above the MRDL	0.8 (MRDLG)	0.8 (MRDL)	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia. *Add for public notification only*: The chlorine dioxide violations reported today are the result of exceedances at the treatment facility only, not within the distribution system which delivers water to consumers. Continued compliance with chlorine dioxide levels within the distribution system minimizes the potential risk of these violations to consumers.
86b. Chlorine dioxide, where one or more distribution system samples are above the MRDL	0.8 (MRDLG)	0.8 (MRDL)	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia. *Add for public notification only*: The chlorine dioxide violations

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Contaminant	MCLG[1] mg/L	MCL[2] mg/L	Standard Health Effects Language for Public Notification
			reported today include exceedances of the EPA standard within the distribution system which delivers water to consumers. Violations of the chlorine dioxide standard within the distribution system may harm human health based on short-term exposures. Certain groups, including fetuses, infants, and young children, may be especially susceptible to nervous system effects from excessive chlorine dioxide exposure.
87. Control of DBP precursors (TOC)	None	TT	Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.
I. Other Treatment Techniques			
88. Acrylamide	Zero	TT	Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer.
89. Epichlorohydrin	Zero	TT	Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.

Appendix B Endnotes

Revision History

Date	Action	FEDERAL REGISTER Citation
24 August 2000	Created tables	65 FR 26024 (4 May 2000) as amended by 65 FR 40520 (30 June 2000)
30 January 2001	1) revised entries for beta/photon, alpha emitters, and combined radium, and added entry for uranium	65 FR 76750 (7 December 2000)
	2) revised entry for arsenic	66 FR 7065 (22 January 2001)

[1]. MCLG - Maximum contaminant level goal

[2]. MCL - Maximum contaminant level

[3]. For water systems analyzing at least 40 samples per month, no more than 5.0 percent of the monthly samples may be positive for total coliforms. For systems analyzing fewer than 40 samples per month, no more than one sample per month may be positive for total coliforms.

[4]. There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, the 1989 Surface Water Treatment Rule, and the 1998 Interim Enhanced Surface Water

Treatment Rule. The MCL for the monthly turbidity average is 1 NTU; the MCL for the 2-day average is 5 NTU for systems that are required to filter but have not yet installed filtration (40 CFR 141.13).

[5]. NTU - Nephelometric turbidity unit

[6]. There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, the 1989 Surface Water Treatment Rule (SWTR), and the 1998 Interim Enhanced Surface Water Treatment Rule (IESWTR). Systems subject to the Surface Water Treatment Rule (both filtered and unfiltered) may not exceed 5 NTU. In addition, in filtered systems, 95 percent of samples each month must not exceed 0.5 NTU in systems using conventional or direct filtration and must not exceed 1 NTU in systems using slow sand or diatomaceous earth filtration or other filtration technologies approved by the primacy agency.

[7]. TT - Treatment technique

[8]. There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, the 1989 Surface Water Treatment Rule (SWTR), and the 1998 Interim Enhanced Surface Water Treatment Rule (IESWTR). For systems subject to the IESWTR (systems serving at least 10,000 people, using surface water or ground water under the direct influence of surface water), that use conventional filtration or direct filtration, after January 1, 2002, the turbidity level of a system s combined filter effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a system s combined filter effluent must not exceed 1 NTU at any time. Systems subject to the IESWTR using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the primacy agency.

[9]. The bacteria detected by heterotrophic plate count (HPC) are not necessarily harmful. HPC is simply an alternative method of determining disinfectant residual levels. The number of such bacteria is an indicator of whether there is enough disinfectant in the distribution system.

[10]. SWTR and IESWTR treatment technique violations that involve turbidity exceedances may use the health effects language for turbidity instead.

[11].These arsenic values are effective January 23, 2006. Until then, the MCL is 0.05 mg/l and there is no MCLG.

[12]. Millions of fibers per liter

[13]. Action Level = 0.015 mg/L

[14]. Action Level = 1.3 mg/L

[15]. Millirems per year

[16]. Picocuries per liter

[17].The uranium MCL is effective December 8, 2003 for all community water systems.

[18]. Surface water systems and ground water systems under the direct influence of surface water are regulated under Subpart H of 40 CFR 141. Subpart H community and non-transient non-community systems serving ∃10,000 must comply with DBP MCLs and disinfectant maximum residual disinfectant levels (MRDLs) beginning January 1, 2002. All other community and non-transient noncommunity systems must meet the MCLs and MRDLs beginning January 1, 2004. Subpart H transient non-community systems serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2002. Subpart H transient non-community

systems serving fewer than 10,000 persons and systems using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.

[19]. The MCL of 0.10 mg/l for TTHMs is in effect until January 1, 2002 for Subpart H community water systems serving 10,000 or more. This MCL is in effect until January 1, 2004 for community water systems with a population of 10,000 or more using only ground water not under the direct influence of surface water. After these deadlines, the MCL will be 0.080 mg/l. On January 1, 2004, all systems serving less than 10,000 will have to comply with the new MCL as well.

[20]. The MCL for total trihalomethanes is the sum of the concentrations of the individual trihalomethanes.

[21]. The MCL for haloacetic acids is the sum of the concentrations of the individual haloacetic acids.

[22]. MRDLG - Maximum residual disinfectant level goal

23. MRDL - Maximum residual disinfectant level