



Waterproof: Standards

What country is doing the most to ensure its citizens have the safest glass of water?

Australia? Canada? The Netherlands? If you guessed Canada – unfortunately – you’re wrong.

Ecojustice has examined the Guidelines for Canadian Drinking Water Quality (the “Canadian Guidelines”) and compared them with corresponding frameworks in the United States, European Union, and Australia, as well as guidelines recommended by the World Health Organization.¹

What we found is troubling: In dozens of instances, the Canadian Guidelines are weaker than those in other jurisdictions and at risk of falling farther behind. In many more cases, Canada has no standard for substances where other countries do.

Given that Canada’s standards continue to lag behind international standards, it seems that significant improvement won’t happen without meaningful government action.

Based on the findings in this report, we are calling for:

- ◆ An immediate review of some contaminant standards; and,
- ◆ Action to address the systemic problems contributing to Canada’s weak standards and failure to update them in a timely way.

How the Canadian Guidelines work

Current water treatment methods and economic constraints preclude the delivery of water that is 100 per cent pure. Instead, Canadian health officials set standards, which determine the maximum allowable level of contaminants in water considered safe for human use and consumption.

Setting these standards, known as the Guidelines for Canadian Drinking Water Quality, is complicated. Adding to the challenge is the constantly changing nature of health risk assessments and the hundreds of new chemicals introduced each year.

Why are standards important?

The existence of standards and their stringency directly affects the safety of the water we drink.

The standards also indirectly affect drinking water because they are factored into land-use and industrial activity approvals. For example, waste discharge may be allowed as long as it doesn’t increase a contaminant level beyond the established threshold.

Findings



THE UGLY

189

substances for which **CANADA HAS NO STANDARD** or guideline but at least one other country does

105

are **APPROVED FOR USE IN CANADA** or likely present in the Canadian environment

78

are **NOT** in use

6

are **BANNED**

THE GOOD

24

substances for which **CANADA HAS OR IS TIED FOR STRONGEST STANDARD** or guideline of comparison group

THE BAD

27

substances for which **CANADA HAS OR IS TIED FOR WEAKEST STANDARD** or guideline of comparison group

13

substances for which **AT LEAST ONE OTHER MEMBER** of the comparison group **HAS A STANDARD OR GUIDELINE STRONGER THAN CANADA**

46

substances for which **CANADA HAS A STANDARD** or guideline and at least one member of comparison group doesn't

NOTE: There are 189 substances regulated in other countries for which Canada has no standard. In some cases, this is justifiable as the substance is banned (six instances) or not in use in Canada (78 instances). But that still leaves 105 unregulated substances used or likely present in Canada that at least one other country deems harmful enough to regulate.²

Our complete data set, which lists each substance and jurisdictional standard is found online at: ecojustice.ca/waterproof-standards

THE GOOD

24 substances for which Canada has or is tied for strongest standard

46 substances for which Canada has a standard and at least one other country doesn't

THE BAD

27 substances for which Canada has or is tied for weakest standard of the countries that have standards³

THE UGLY

105 substances approved for use in Canada or likely present in the Canadian environment and unregulated in Canada, but regulated in at least one other country

To put it simply, deficiencies and weaknesses in the Canadian Guidelines matter.

The Canadian Guidelines deal with microbiological, chemical and radiological contaminants. Long-term exposure to these substances above safe levels could lead to cancers; neurological, reproductive or developmental disorders; harm to organs such as the liver and kidneys; and, other maladies.

While Ecojustice is calling for a review of the overall deficiencies in the way Canada regulates drinking water, a few of these standards require immediate attention:

2,4 D or 2,4-Dichlorophenoxyacetic acid *(Canada has weakest standard)*

2-4-D (short for 2,4-Dichlorophenoxyacetic acid) is a common herbicide and has been frequently detected in surface water across Canada.⁴

Long-term exposure can damage the nervous system, liver and kidneys and it is considered a possible human carcinogen. The standard for this substance is 1.5 to 3 times stronger in other countries than it is in Canada.

Styrene

(Canada has no standard)

Styrene is classified as a possible human carcinogen by the International Agency for Research on Cancer and is used in Canada to make polystyrene, synthetic rubber and latex. According to the U.S. Environmental Protection Agency: "Some people who drink water containing styrene well in excess of the maximum contaminant level for many years could have problems with their liver, kidney, or circulatory system problems."⁵

Canada has no goal, guideline or standard for styrene, but the United States, Australia and the World Health Organization have set a maximum allowable limit for this substance in drinking water.

Drinking water samples taken in Ontario show that the range of mean concentrations of styrene in treated water from 80 supplies in Ontario's Drinking Water Surveillance Program was 0.050-0.250 microgram/L., which suggests that there are drinking water supplies that exceed the U.S. standard.

Microbiological treatment standards

(Canada has no standard)

There is a general consensus among health, medical, and scientific experts that the greatest threat to drinking water in industrialized nations is posed by waterborne pathogens.

Waterborne pathogens pose a greater threat than chemical contaminants because they can have immediate and severe health effects; infected persons can transmit the illness to others who may not have been exposed to the pathogen; and, because harm may come from exposure at much lower concentrations or duration of exposure.

To address this threat, the U.S. now requires advanced filtration (or equivalent technology) of its drinking water — a practice Canada should consider adopting.⁶

A close-up photograph of water ripples, showing the intricate patterns of light and shadow on the surface of the water. The ripples are concentric and spread out from a central point, creating a textured, shimmering effect. The colors range from light blue to a deeper, darker blue, with white highlights where the water is most turbulent.

What do weak or non-existent standards mean to Canadians?

Risk to human health

For decades, Canada has been known for its efforts to protect public health. Given Canada's status as a relatively wealthy nation, both economically and in terms of water availability, there is no reason that Canadians shouldn't have the safest drinking water in the world. However, government and regulatory efforts required to achieve this goal are lacking.

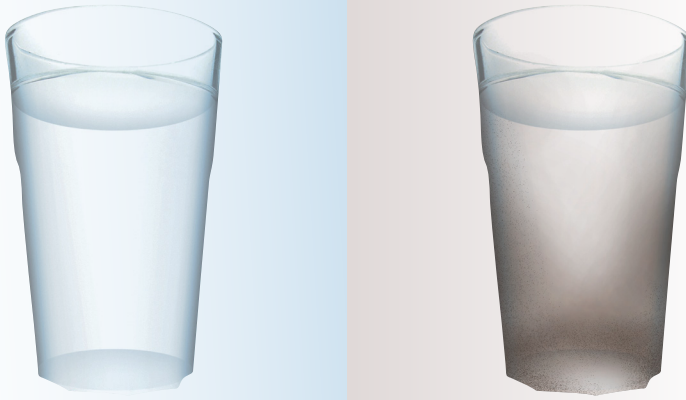
Weak or non-existent standards mean that contamination may not be discovered before water is delivered to residents, putting their health at risk. "Acute" contaminants, such as waterborne pathogens (bacteria, viruses, and protozoa) can cause illness and affect a high proportion of a community's population — in some cases even causing death — within days or mere hours of exposure.

Prolonged exposure to "chronic" contaminants, such as tetrachloroethene (for which Canada's standard is weaker than that of the European Union and United States), over many years could cause liver problems and increase the risk of cancer. Without strong standards, residents could be unknowingly consuming unsafe water for years.

Uncertainty in the face of a changing climate

Longer droughts and more frequent extreme weather events caused by climate change can have dire consequences for human health, including introducing or exacerbating threats to drinking water. Extended dry periods can cause industrial and organic pollutants to build up on land – which an intense rainstorm can wash into water bodies all at once. Droughts can also decrease river flows and lake levels, which can concentrate pollutants. Extreme weather events can trigger floods and erosion, which risk overwhelming water treatment systems (such as filtration centres).

While it is essential to mitigate climate change, we must also adapt to coming changes. Strengthening our water standards is a key part of addressing increased risks to the safety of our drinking water.



Unequal access to water

In an ideal world, a glass of water anywhere in Canada would be safe to drink.

Sadly, Canadians do not have equal access to safe drinking water. While most major Canadian cities have relatively sophisticated water treatment facilities, many rural and First Nations communities lack such infrastructure and rely on untreated or minimally-treated water, particularly groundwater from wells.

This inequity in the quality of water treatment in rural and First Nations communities, combined with weak or absent enforcement of contaminants standards, creates a disproportionate level of risk.

Addressing these inequities will require a full-scale effort to strengthen all aspects of drinking water protection — including the standards discussed in this report. This comprehensive approach to drinking water protection is also known as the “multi-barrier approach” (see right for more information).

The multi-barrier approach

While having strong drinking water standards is critical — and perhaps the most foundational step — to ensuring that our water is safe to drink, it is not a silver bullet.

Threats to Canadian drinking water are in all places at all times. The complexity of these challenges has resulted in the widespread endorsement of what’s known as a “multi-barrier approach to drinking water protection.”

The multi-barrier approach includes source water protection, strong water infrastructure and treatment systems and robust drinking water standards.

The multi-barrier approach is explored in greater detail in *Waterproof*³.

Key issues

Lack of Accountability

Right now in Canada, there is no one official or ministry that is ultimately responsible for setting the standards contained in the Canadian Guidelines, let alone ensuring that those guidelines are translated into law and enforced across Canada.

Currently, Health Canada facilitates the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment, which is a voluntary effort not mandated by law. The Sub-Committee certainly does some very important work, but at the end of the day, there is no single official or department who is legally responsible for ensuring the Canadian Guidelines are up to par.

No health-based objectives

One of the challenges of drinking water regulation is that in some cases it is not technologically possible to achieve a truly risk-free level of contaminants. In other cases, technology may exist but it would be cost-prohibitive to install that technology on a widespread basis.

So in many cases, drinking water guidelines are set at an “achievable” level, that still leaves some risk to public health. However, members of the public are in the dark as to which guidelines may still pose a health risk. This information is critical for members of the public to assess their own drinking water sources, which may contain contaminants included in the Canadian Guidelines and still pose a possible health risk.⁷

No special review policy

As the Sub-Committee is a voluntary effort of the federal government, provinces and territories, there are no mandates or requirements for when standards must be reviewed or updated. Right now, this is simply done on an ad hoc basis.

Who's responsible?

Health Canada's Water Quality and Health Bureau

plays a role in science and research. Its primary involvement lies in protecting the health of all Canadians by developing the Guidelines for Canadian Drinking Water Quality in partnership with the provinces and territories. These guidelines are used by jurisdictions in Canada and are the basis for establishing drinking water quality requirements for all Canadians.

Federal-Provincial-Territorial Subcommittee on Drinking Water's

main responsibility is to establish the Guidelines for Canadian Drinking Water Quality. The committee meets twice per year and is made up of voting and non-voting members. There are 14 voting members, one for each jurisdiction in Canada (10 provinces, three territories, and the federal government).

Provincial Ministers of the Environment and/or Health,

depending on legislation, oversee the regulation of drinking water, including the setting of legally-binding drinking water standards as well as a host of other responsibilities related to drinking water management.

Recommendations

Immediate reviews of problem standards

Several standards, including those noted in this report, are significantly weaker than those in comparison jurisdictions. Immediate reviews of such substances should be undertaken.

Incorporate health-based objectives

The Canadian Guidelines should be expanded to include:

- ◆ Binding “maximum contaminant levels,” which determine the maximum level (with an adequate margin of safety) at which a contaminant can be present in drinking water without causing adverse human health effects; and,
- ◆ Non-binding “maximum contaminant level goals,” which are long-term objectives that provide a vision for the future and clarify the distinction between health-based targets and standards based on economic costs and technological constraints.

This approach has been adopted by the U.S. Environmental Protection Agency.

Introduce treatment standards

As discussed earlier in this report, the Canadian Guidelines should move beyond creating recommendations and establish outcome-based treatment standards to ensure effective protection from microbiological organisms through advanced filtration, or an equally effective measure, such as ultraviolet treatment, for all communities whose drinking water supply is provided by surface water sources or groundwater directly influenced by surface water.

Introduce special reviews policy

The Federal-Provincial-Territorial Subcommittee on Drinking Water should adopt a policy of “special reviews” whenever another OECD country implements a new standard or strengthens a standard to a level more stringent than Canada’s. Even if there is a decision not to improve or enact the standard, having a special review policy would ensure that the health of Canadians is not put at risk due to oversight. A similar approach is already mandated by law for pesticides.⁸

Create a national approach to drinking water standards

Standard setting at the national level is commonplace around the world.

Canada currently suffers from a patchwork of standards which vary from province to province to territory. While Canada has some unique jurisdictional challenges, it should, at a minimum, establish the operation of the drinking water subcommittee through legislation, with specific responsibilities, including accepting requests for review of drinking water standards from the public.

Ultimately, there should be binding legal standards for drinking water that are uniform across Canada.

Conclusion

Canada is envied around the world for its natural wealth of fresh water. But there is a major gulf between the quality of our water and the quality of our drinking water guidelines.

What's the single biggest roadblock plaguing Canada's middling performance when it comes to protecting drinking water? A lack of commitment to protecting this country's most precious natural resource.

Canada still lacks a national water law and instead relies on a patchwork of provincial and territorial laws to manage and protect drinking water.

Canada also does not consistently recognize its citizens' right to water and has dragged its feet on the world stage, opposing recognition of an international human right to water at the United Nations. In fact, Canada "played a pivotal role" in defeating the UN Human Rights Council's 2008 draft resolution on a right to water.⁹

All things considered, it's probably no surprise that Canada's drinking water standards have fallen so far behind. As we've reported, Canada has, or is tied for, the weakest standard for 27 substances. And in 105 other cases, Canada has no standard where at least one other comparison country does.

The good news is that unlike introducing a national water law or enshrining the human right to water in the Canadian Charter of Rights and

Freedoms (both worthy aims), strengthening Canada's drinking water standards and bringing them up to par is achievable in the short-term.

The recommendations put forward in this report offer a pragmatic roadmap to improving water protection across the country. These are recommendations the federal government can act on today to address systemic weaknesses that put the health of Canadians at risk.

The extent to which we enjoy safe drinking water today is largely the result of decisions and investments made in the past. Now it's time for

governments at the federal, provincial and municipal level to renew their commitment to protecting Canada's drinking water, starting with the implementation of strong, world-class standards.

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Such standards will prevent unnecessary deaths and illnesses, reduce health care expenses and productivity losses, and improve all Canadians' quality of life. Seems like an investment worth making, doesn't it?



References

Data set

The full data set on which our findings are based can be found online at www.ecojustice.ca/waterproof-standards. It provides the list of each standard, the potential health effects and each country's numeric standard (or lack thereof).

Methodology

Our data set was compiled by Ecojustice staff and volunteers starting in November 2012. A preliminary data set was provided to Health Canada for review in late spring 2013. We have attempted to revise the data set to reflect the helpful comments from Health Canada. In the spring of 2014, the data set was reviewed again to reflect any changes in the jurisdictions. The data set is current as of January 2014.

Further reading

This report was inspired by *The Water We Drink* (2006), published by the David Suzuki Foundation and written by David Boyd. While some of the underlying data has changed, this report is an excellent, in-depth discussion of drinking water standards. The report may be found at: www.davidsuzuki.org/publications/downloads/2006/DSF-HEHC-water-web.pdf

Previous reports in Ecojustice's *Waterproof* series address related issues. Those reports focus on, among other things, the extent to which each Canadian province and territory have adopted the Canadian Guidelines. These reports show a patchwork of drinking water regulation at the provincial and territorial level that puts the health of Canadians at risk.

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References

- 1 It is important to note that the U.S. provides citizens with binding national standards while European countries have agreed to binding, supra-national standards. Canada and Australia, however, rely on weaker national guidelines that tend to be unevenly applied at the provincial or state level.
- 2 Because of varying approaches among jurisdictions it was not possible to compare all microbiological and radiological parameters in the database.
- 3 In some cases where Canada has or is tied for the weakest standards, there is another jurisdiction without a standard. In some cases, this is due to the substances being banned or not in use in the other jurisdiction, but we have not comprehensively analyzed these instances due to the limitations of our data set.
- 4 <http://www.ec.gc.ca/Publications/FAFE8474-C360-46CC-81AB-30565982E897%5C PresenceAndLevelsOfPriorityPesticides InSelectedCanadianAquaticEcosystems.pdf>
- 5 <http://water.epa.gov/drink/contaminants/basicinformation/styrene.cfm#three>
- 6 The Canadian Guidelines recommend, but do not require, advanced treatment, stating: "... minimum treatment of supplies derived from surface water sources or GUDI sources should include adequate filtration (or technologies providing an equivalent log reduction credit) and disinfection." See: s. 3.2.1 at <http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/micro/index-eng.php>
- 7 The United States' system, which sets both guidelines and standards, has more than 30 standards where the legal limit is higher than the safe limit. See: <http://water.epa.gov/drink/contaminants/#three>
- 8 Subsection 17(2) of the *Pest Control Products Act* obligates the Minister of Health to conduct a "special review" of pest control products (known commonly as pesticides) that contain active ingredients banned by an OECD member for health and/or environmental reasons.
- 9 Lynda Collins, "Environmental Rights on the Wrong Side of History: Revisiting Canada's Position on the Human Right to Water" (2010) 19:3 RECIEL 351 at 351.