Friends of the Earth Canada

Comments and recommendations regarding:

Draft Guidance on Asbestos in Drinking Water
Guidance document for public consultation
https://www.canada.ca/en/health-canada/programs/consultation-guidance-asbestos-drinking-water/document.html

Submitted to Health Canada

Email: water-consultations-eau@hc-sc.gc.ca

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Summary

The draft guidance for waterborne asbestos marks the first invitation by the Canadian government for public discussion of asbestos in drinking water, and asbestos-cement pipes.

Prevent Cancer Now, Canadian Environmental Law Association, and Friends of the Earth Canada submit the following comments and recommendations in response to the Consultation Document: Draft Guidance on Asbestos in Drinking Water - Guidance document for public consultation released on January 23 2026.

We call for Health Canada to recognize that asbestos—a known human carcinogen—is hazardous and causes cancer when it is waterborne; and to establish a formal Guideline for drinking water quality. With corrections to data and interpretations presented in the consultation document, plus the peer-reviewed literature discussed below, the three criteria outlined by Health Canada are met to develop a maximum acceptable concentration (MAC) for asbestos in drinking water:

1. exposure to the substance could lead to adverse health effects;
2. the substance is frequently detected or could be expected to be found in a large number of drinking water supplies throughout Canada;
3. the substance is detected, or could be expected to be detected, at a level that is of possible health significance.

The Health Canada draft assessment has substantial methodological and scientific shortcomings. We offer the following analyses and commentary to support development of asbestos drinking water guidelines for all Canadians, particularly to protect those who are at higher risk of exposure and most vulnerable to the impacts of asbestos (e.g. workers, and families including young children whose water supply relies on cement asbestos pipes). We take this opportunity to direct attention to:

- correction of summarized peer-reviewed data (e.g., Donham et al. clearly demonstrates carcinogenicity of ingested asbestos, comparing the exposed animals to *two* control groups of equal numbers);
- interpretation of data, while recognizing that studies investigating the impacts of oral ingestion of asbestos fibres are limited and many are older;
- the facts of inhalational exposure from dried residues (e.g., laundry), as well as boiling water, showers and humidifiers—e.g., potentially releasing millions of asbestos fibres into the breathing zone of a child;
- the lack of relevant, recent analyses of asbestos in Canadian drinking water sources; and
- the need for an accredited Canadian laboratory to measure concentrations and size distributions of asbestos fibres in water samples.

Over decades, Canada provided the world with approximately 40% of its chrysotile asbestos, and Canadian researchers contributed to the body of science demonstrating carcinogenicity in affected workers and communities. In 2018 the federal government took regulatory action against bulk and airborne asbestos to prevent cancer, while noting a lack of “consistent, convincing evidence” regarding swallowing asbestos. This is a high bar of proof given data scarcity, and limitations of research investigating harms of ingesting asbestos in drinking water. Similar claims have been made in the consultation document.

Canada's asbestos-cement water pipes have been aging and breaking, and asbestos is increasingly contaminating drinking water in affected neighbourhoods. Responses focus on pipe replacement, but not public health implications. The present consultation should fill this important public health scientific and regulatory gap.

The consultation document reiterates a need for, "consistent, convincing evidence" that asbestos, a known human carcinogen according to the International Agency for Research on Cancer,[1] is harmful *when swallowed*. As noted, such evidence is thwarted by Canada's lack of an analytical method, laboratory capacity and data on asbestos contamination of drinking water, all of which is a consequence of the assumption that drinking asbestos is "safe." Within this circular reasoning, there is certainly no "consistent, convincing evidence" that drinking asbestos is *safe*. Furthermore, with millions of Canadians ingesting increasingly contaminated water from aged, degrading asbestos cement pipes, the cumulative impacts could be considerable, and may already be reflected in Canada's increasing incidence of cancers; particularly colorectal cancer. A 2022 Statistics Canada infrastructure survey found that approximately 14,000 km of asbestos cement pipes carrying drinking water were reported by 64% of surveyed jurisdictions.[2]

Asbestos is one of the most-studied toxicants, with extensive scientific literature spanning many decades. Inhaling, then swallowing fibres cleared from lungs, was described by the International Agency for Research on Cancer in their conclusion that asbestos is a known human carcinogen.[1] Abdominal cancers associated with airborne asbestos are presumed to arise from swallowing contaminated phlegm cleared from the respiratory tract, but contaminated drinking water is another potential exposure route. Water-borne asbestos can contaminate air when boiled, aerosolized in humidifiers or when showering, and shed from laundered linens and clothing, resulting in airborne exposures.

Asbestos fibres have been visualized in gastrointestinal and liver cancers (cholangiocarcinoma).[3,4,5,6] Moreover, visualized fibres in these tissues are often smaller than 10 µm, consistent with the shorter fibres seen in drinking water.[7,8]

Importantly, academic research methods and reporting styles have evolved over time, often resulting in discounting of older studies. Health Canada leans on a systematic review (Go, et al.) published in 2025, that clearly illustrates carcinogenic potential of ingested asbestos.[9] Some of this work is included in the consultation document.

Human epidemiological studies, published from 1974 to 2015, reported that ingestion of asbestos was significantly associated with cancer incidence and/or mortality in 11 out of 14 studies. A 2024 systematic review of asbestos ingestion and gastrointestinal cancers, with a somewhat different selection of included studies found a causal link between occupational asbestos exposure and the risk of oesophageal, stomach and colorectal cancer.[10]

Animal studies are not reported as having as many significant findings, but the consultation document misrepresents the Donham et al. study. This key, early study had two control groups—one fed cellulose to mimic the bulk of the asbestos loading, and one a simple control group, so there were twice as many "unexposed" animals and the incidence of cancer in the asbestos-exposed animals was substantially higher. As well, ashed tumour samples identified fibres in the "control" group tumours, so it was not a clean comparison. This initial large experimental study details experimental challenges, and **did** find

that waterborne asbestos caused cancers. Thus, two animal studies support that ingested asbestos is a carcinogen.

Regulation of asbestos in water would require water quality analytical methodology and capacity to meet regulatory obligations. Water quality data could assist with prioritization of pipes replacement, beyond responding to increasing pipe breaks. The consultation draft suggests that a science-based MAC (maximum allowable contamination level) is necessary for a standard (action level) before pipes replacement can be directed.

It is not good governance nor in the interest of public health to await unprioritized research, to identify a threshold that may not exist, before taking action to minimize asbestos in drinking water.

An asbestos standard to highlight risks and to track progress would specify: 1. the fibre size range of interest; and 2. a maximum concentration of fibres in water. These could be set pragmatically, now.

> ***Particle size:*** The U.S.A. standard to count only large fibres, 10 µm (micrometres or microns) and larger, was set decades ago to ensure adequate access to current day analytical capacity. The vast majority of particles are much smaller than 10 µm, and these are harmful, so the U.S.A. standard is insensitive and is outdated.[11] With modern technologies and knowledge of hazards of smaller fibres, we recommend that the size range of interest be consistent with other waterborne particulate contaminants. The consultation notes asbestos fibre size distributions with peaks at 4 µm or smaller. Modern analyses of particle size distributions, and a smaller regulatory particulate size minimum (e.g., ESML labs report fibres both >10 µm and >0.5 µm [12]). would be a more meaningful threshold of concern.
>
> ***Contaminant levels:*** The consultation document indicates that utilities' drinking water treatment removes asbestos from source water. Thus, if there is no source of asbestos in the water distribution network, asbestos fibre counts will be very low. A maximum fibre count should signal early concerns in the context of background levels with robust infrastructure in place. There is no "safe" level of asbestos exposure—"millions of fibres per litre" represents substantial contamination; not a precautionary approach. A guidance value should be much lower.

Internationally, several nations are expediting replacement of asbestos cement pipes because of concerns that waterborne asbestos is contributing to increasing cancer rates, as well as the disruption and costs of frequent pipe breakages.[13,14,15] Canada has not yet made such a commitment.

Enabling important Canadian cancer research

When the present and historical locations of asbestos cement pipes are available, this data would help to enable epidemiological research including cohorts of newly diagnosed relevant cancers such as colorectal—a rapidly increasing malignancy in younger and younger Canadians.[16]

Recommendations for Actions

1. **Establish Guidelines for asbestos in drinking water. Acknowledge** that asbestos in drinking water is a human health concern. Health Canada has a role to state this unequivocally and publicly, and to counter misinformation such as by local municipalities that citizens need not worry about cloudiness, sludge or sediment in drinking water impacted by asbestos cement pipe degradation and breakage, notably during and following pipe repairs.
2. **Do not support the draft consultation proposal by Health Canada which recommends no action to develop a Maximum Allowable Contaminant (MAC) level for asbestos in water**. The criteria to support the development of guidelines seem to have been met, and action to establish a MAC is a priority.
3. **In affected areas, the government should test drinking water** for asbestos annually and following repair of asbestos cement water pipes, and report results to the public.
4. **Develop guidelines for asbestos in drinking water** by Health Canada in collaboration with the Federal-Provincial-Territorial Committee on Drinking Water with an initial, interim goal of "As Low As Reasonably Achievable" (ALARA) in terms of both fibre size and concentrations.
   Recommended limits must include a substantial majority of asbestos fibres, including particles as small as 0.5 µm and larger, as for some other airborne pollutants.
   Report the spectrum of fibre counts over size ranges, as is currently available from some laboratories.

Establish Laboratory Accreditation and Facilities for analysis of asbestos in drinking water

5. **Establish** accredited laboratory test methods for asbestos in drinking water.
6. **Establish** Canadian analytical laboratory capacity to measure asbestos in water, with reporting of the spectrum of fibre sizes ranging from less than one micrometre to greater than 10 micrometre (0.5 µm to >10 µm) length; substantially more sensitive than the U.S.A. limit (7 million fibres per litre [MFL] for fibres ≥ 10 µm).

Testing and Reporting of asbestos in drinking water

7. **Establish** a periodic water testing survey for affected municipalities as suggested in Health Canada's draft guidance (e.g., sampling from fire hydrants) in order to: establish baseline data; to guide recommendations for water treatment (private or public); and to support prioritization of asbestos-cement pipe replacement.

Advancing Asbestos Eradication in Canada

8. **Support and expand research and capacity** for asbestos eradication in Canada, with goals to: 1. outline and validate best practices to measure, to prevent and to minimize asbestos in drinking water; 2. establish best practices for asbestos-cement pipe removal, disposal, and replacement; and 3. support continuing medical education and research to investigate roles of asbestos in increasing related disease, including cancers.
9. **Commit to work with all levels of governments** to develop and execute a plan to identify and to replace existing cement water pipes with non-asbestos alternatives: 1. expedite and help to finance

identification and safe replacement of asbestos cement water pipes, as well as any connected lead service lines; and 2. ensure reporting of the progress in completion of this work.

10. **Where drinking water flows through asbestos cement pipes** to points of use:
    - establish downstream local water treatment if appropriate, and/or
    - support in-home treatment to remove ultrafine particulate matter.
11. **Assemble and make accessible historical and present-day mapping** of areas serviced by asbestos cement pipes, and downstream of asbestos cement pipes, to enable epidemiological research.
12. **Support research, education and capacity** to include asbestos in differential clinical diagnoses of cancers potentially associated with ingestion of asbestos.

International Commitment

13. **Support the listing of Chrysotile Asbestos under the Rotterdam Convention for Prior Informed Consent.**

Recommendations for New Financial Commitments

Many of our recommendations could be accommodated in Health Canada's existing operations. Several will require **new financial commitments which we request as inputs to Budget 2026**.

New operating funds will be required for the following recommendations:

- Significant investment for planning and action on replacement of existing cement water pipes with public reporting on progress;
- Establishing Laboratory Accreditation and Facilities for analysis of asbestos in drinking water;
- Establishing a periodic water testing survey for affected municipalities and develop a public facing portal for test results and other relevant information;
- Testing drinking water for asbestos annually and following repair of asbestos cement water pipes, and report results to the public;
- Funds for downstream local water treatment if appropriate and/or in home treatment technology to remove ultrafine particulate matter; and,
- Funds for research, education and capacity to include asbestos in differential clinical diagnoses of cancers potentially associated with ingestion of asbestos.
- Advancing Asbestos Eradication in Canada Research on best practices and support for continuing medical education and research to investigate roles of asbestos in increasing related disease, including cancers;
- *Quantifying financial amounts is beyond the scope of this consultation response, but the submitting organizations will consider the necessary levels of funds in the coming months and strongly recommend a financial commitment in Budget 2026.*

In the following sections, we offer expanded comments supporting the recommendations on concerns with impacts of asbestos on health of Canadians, the contributions of asbestos from current and presence of asbestos in cement water pipes in Canada, and the uncertainties and scientific limitations in studies focused on contribution of asbestos from oral ingestion to adverse effects. We also discuss replacement of asbestos-cement water infrastructure.

Introduction

Over the past century, asbestos has fallen from use as a "miracle mineral" that was fire-proof and insulating, and used widely in industries, buildings and products. Asbestos is a known human carcinogen,[1] that was largely prohibited in 2018 under the *Canadian Environmental Protection Act*, and subject to regulation restricting use, (e.g., asbestos may be permitted for the military, and nuclear power), and prescribing removal and disposal of hazardous materials.[17] Canadian asbestos regulations and water quality guidance, however, are silent on water pipes.

Canada was "rich" with asbestos, and over time exported approximately 40 percent of the chrysotile asbestos used globally. The dark underbelly of sharp microscopic asbestos fibres was first identified in previous generations, with ailments in miners, factory employees, and tradesmen working with asbestos-containing materials. Workers' lives were too-often too short, ending with the breathlessness of asbestosis stiffening lungs, and cancers such as lung cancer, mesothelioma, and stomach, gastrointestinal, rectal, liver, ovarian and bladder cancers. Workers were worst affected; but fibres clinging to clothes, or even brought home in bulk for insulation (compliments of generous employers, as in Peterborough ON), continue to impact families through generations. Homes and neighbourhoods can be impacted by dust, and there is dread of upcoming remediation of asbestos-contaminated sites.

Distinct from industrial sites, contaminated buildings and exposures to dust, asbestos also contaminates drinking water. Fibres originate in natural erosion of asbestos-rich rock, industrial runoff, asbestos-impacted aquifers, or water transported via asbestos-reinforced cement (asbestos-cement or "transite" pipes; approximately 20% asbestos when new) carrying drinking water to homes and businesses. Over time minerals in cement (calcite) dissolve and wash away, the internal pipe surface erodes, and asbestos is shed into drinking water. Asbestos fibres remain as the cement dissolves, and according to a WorkSafe BC fact sheet, "Aged, failing pipes, from which the binding materials have leached, can be up to 80 percent asbestos."[18,19]

Asbestos is a potent multi-site carcinogen, and incidence of colorectal cancer is increasing rapidly in ever-younger Canadians.[16] Although diet and diverse other exposures are reasonably expected to be contributing to this scourge, the increasing ingestion of asbestos in some households cannot be discounted. Informed citizens, clinical awareness and analytical capacity are essential to support epidemiological research and measures to protect public health.

It is essential to have means and capacity to measure and characterize waterborne asbestos, in order to manage it. Unfortunately, Canada has no standard or policy for asbestos in drinking water, nor even an accredited methodology to measure asbestos in water. With no domestic commercial laboratory capacity, Canadian laboratories send samples to the U.S.A. for analysis according to American methodology and standards.[20]

The present draft guidance for waterborne asbestos marks the first Canadian federal invitation for public discussion of asbestos in drinking water, and asbestos cement pipes. Prevent Cancer Now and

Waterborne asbestos assessment and response are impacted by *scientific limitations* as to what is "known" and "knowable," *lack of awareness,* and *common misconceptions*:

- limitations of knowledge of exposure to waterborne asbestos, in turn, limit linking with cancers;

- hazard characterization to inform a precautionary public health approach to asbestos-containing waterworks, measures to minimize asbestos in Canadian drinking water, and research needs;
- late-day national and international experiences with asbestos-cement pipes contaminating drinking water; and
- asbestos-cement pipes management and replacement, with secure waste disposal.

Drinking water contamination from asbestos-reinforced cement pipes

Naturally occurring asbestos should be captured with appropriate filtration of communities' source water, but asbestos-reinforced cement pipes (asbestos-cement pipes) shed asbestos into pre-treated drinking water enroute to homes and businesses. Unfortunately, citizens may be misinformed about potential asbestos contamination (Appendix 1).

Across Canada, asbestos cement pipes were installed from the 1930s to the 1990s. Many jurisdictions still rely on extensive asbestos-cement pipe networks to supply drinking water (see sample map examples in Appendix 2).

A National Research Council centre at the University of Regina studied the city's extensive asbestos cement pipes network and published ten reports citing "health hazard" and "cancer".[21] This failing infrastructure contaminates drinking water and is over-due for replacement, to ensure reliable, safe, essential water supplies.

Pipe breaks often occur in regions with clay soil, which expands and contracts with moisture, or lack thereof, promoting pipe breakage. Extreme heat and deluges are worsening with climate change, risking increasing breaks. Secondly, calcite in the cement dissolves over time (particularly with soft water), the pipes weaken, increasing quantities of asbestos are shed into drinking water, and the pipe eventually breaks (too often "catastrophically").

Canada's asbestos cement pipes are reaching this stage, with increasing breakages causing water outages, floods, and expensive emergency repairs, and asbestos contamination of drinking water including asbestos-laden sludge.

Asbestos cement pipes deliver water to thousands of Canadian homes, schools and businesses. Statistics Canada reported approximately 14,000 km of asbestos cement pipe, with more asbestos cement pipe in the west than the east, based on Statistics Canada Infrastructure Survey answers from 64% of jurisdictions for 2022.[2] This question was repeated for the year 2024, with results anticipated later in 2026.

Measuring asbestos in water

Focusing attention and credence, and following progress in asbestos eradication, requires Canadian laboratory accreditation, for detailed data characterizing asbestos contamination in water. Presently all samples are sent to U.S.A. laboratories.

Carcinogenicity of ingested asbestos

Asbestos is one of the most-studied toxicants, with extensive scientific literature spanning many decades. Inhaling, then swallowing fibres cleared from lungs, was described by the International

Agency for Research on Cancer in their conclusion that asbestos is a known human carcinogen.[1] Abdominal cancers associated with airborne asbestos are presumed to arise from swallowing contaminated phlegm cleared from the respiratory tract, but contaminated drinking water is another potential exposure route. Water-borne asbestos can contaminate air when boiled, aerosolized in humidifiers or when showering, and shed from laundered linens and clothing, resulting in airborne exposures.

Asbestos fibres have been visualized in gastrointestinal and liver cancers (cholangiocarcinoma).[3,4,5,6] Moreover, visualized fibres in these tissues are often smaller than 10 µm, consistent with the shorter fibres seen in drinking water.[7,8]

Importantly, academic research methods and reporting styles have evolved over time, often resulting in discounting of older studies. Health Canada leans on a systematic review (Go, et al., 2025), that clearly illustrates carcinogenic potential of ingested asbestos.[9] Selections from this work is included in the consultation document.

Comments on the consultation summaries of carcinogenicity research

Human epidemiology is strong, that ingestion of asbestos causes cancers. The consultation document summarizes human epidemiological studies, published from 1974 to 2015, that reported that ingestion of asbestos was significantly associated with cancer incidence and/or mortality in 11 out of 14 studies. A 2024 systematic review of asbestos ingestion and gastrointestinal cancers, with a somewhat different selection of included studies found a causal link between occupational asbestos exposure and the risk of oesophageal, stomach and colorectal cancers.[10]

Animal studies are not reported as having as many significant findings, but the consultation document misrepresents the large Donham et al. study. This key, early study had two control groups—one fed cellulose to mimic the bulk of the asbestos loading, and one a simple control group, so there were twice as many "unexposed" animals. In fact, counter to the consultation report, the incidence of cancer in the asbestos-exposed animals was substantially higher. As well, ashed tumour samples identified fibres in the "control" group tumours, so it was not a clean comparison. This initial large experimental study details experimental challenges, and **did** find that waterborne asbestos caused cancers. Thus, at least twice as many animal studies support that ingested asbestos is a carcinogen.

Asbestos inhalation versus ingestion is a false dichotomy

Asbestos is a known human carcinogen, and was one of the first substances examined by the nascent International Agency for Research on Cancer (IARC, 1977).[1] The initial focus was on occupational airborne exposures in mining and manufacturing, with workers and families dying of lung cancers and mesothelioma. The draft guidance document details studies reporting asbestos fibres have been found in numerous tissues and in urine, in animal studies and in humans. Cancers that were elevated with asbestos exposures including:

> buccal cavity, pharynx, esophagus, trachea, bronchus, lung, mesothelioma, stomach, liver, gallbladder, pancreas, intestines, rectum, peritoneum, genitalia, bladder, ovary, breast, and eye.

Are "smaller" asbestos fibres removed by phagocytes, so they do not pose cancer risks?

This is briefly aired in the draft guidance, and has been proposed in the literature. In contrast, the draft guidance reports observations of asbestos fibres traversing membranes and entering lymph and blood circulatory systems, and appearing in urine. This is consistent with observations of fibres being widely dispersed in animal tissues (as discussed by Donham et al.), and the many cancer sites listed above.

When exposure is primarily airborne, how does asbestos cause cancers beyond the lungs?

There is no "bright line" between exposure to asbestos in drinking water, versus airborne asbestos and handling of solid materials. Swallowing is not distinct from inhaling asbestos:

- Inhaled asbestos is cleared from the lungs via mucociliary action, then swallowed;
- Waterborne asbestos fibres become airborne many ways, such as when water is boiled, sprayed in showers, dispersed via a humidifier; or later when fibres on surfaces, clothing or bedding are re-mobilized.

Beyond swallowing asbestos as it is cleared from the respiratory tract, other cancers associated with airborne asbestos fibres include mesothelial and more distant bladder and ovarian cancers. These reflect migration of fibres to underlying tissue, and to circulatory systems for blood and lymph. Early animal studies of asbestos reported fibres widely distributed throughout the body, and in urine as well as feces. Indeed, excreted asbestos represents a containment challenge in the laboratory.[23]

Scope of the problem and elements of solutions

In 2026, deteriorating asbestos cement pipes deliver water to millions of Canadians, who are at risk of increasingly frequent pipe breaks, water outages and floods, and asbestos-contaminated domestic water. Despite absence of Canadian laboratory quantification, wherever this aging infrastructure is in use, residents of all ages, in entire households, are encountering increasing levels of asbestos in drinking water, showers, laundry and humidified air.

Surveillance strategies such as monitoring asbestos levels and condition assessment of pipes to inform infrastructure replacement schedules.

Surveillance must be based on knowledge of where pipes are located in individual jurisdictions, with mapping as in the Appendix.

Progress may be followed with successive Canada-wide via Statistics Canada infrastructure surveys.[2]

Healthy drinking water is a national priority, and expedited safe replacement of asbestos cement pipes fits the rubric of a "nation building project." This is an opportunity for the country that led the world in use of asbestos, now to lead in cleanup with technology for efficient "trenchless" asbestos cement pipe removal, safe disposal and replacement.

Asbestos eradication. Canada has regulated asbestos in air, and existing asbestos in buildings and equipment have been identified, contained, and targeted for elimination.
(Prohibition of Asbestos and Products Containing Asbestos Regulations, SOR/2018-196)

1. Asbestos removal and disposal are guided by detailed occupational health and safety (OHS) and hazardous waste disposal rules and practices at the provincial level. Protocols are required for

removal and disposal of asbestos cement pipes, such as detailed in resources from WorkSafe BC.[19]

Public awareness for personal protective actions. When public health officials, from local to national, tell the public not to worry or take protective action against a scientifically robust risk, then the public is in fact put at risk. They do not take even the simplest steps to protect the health of themselves and their family. Appendix 1 includes images of door hangers used in Regina, that misinform residents and dissuade them from reducing their exposure to asbestos fibres when asbestos-cement pipes are broken, repaired or replaced.

Setting a standard is central to consistent regulatory actions, but the present day U.S.A. 10 µm threshold excludes the majority of fibres, which are smaller. This standard was set at a time when technologies were not developed or readily available to count smaller fibres routinely; it was based on pragmatism to accommodate as well as possible the science and analytical capacity of the day. According to sources referenced in the consultation, the U.S.A. >10 µm threshold can *exclude* 90% or more of asbestos in samples from aging asbestos-cement pipes(pp 13-14 in the consultation document). Canada's standard must include particle sizes comparable to those regulated for air.

Disposal of Asbestos Cement Pipes creates toxic sites

There is broad consensus that pipes must not be left in the ground, as asbestos pipe residues create a toxic site that must be documented and protected, and is likely to be disturbed in the future.

It is overdue for asbestos shed from deteriorating water infrastructure to be treated as a preventable hazard.

Examples of international actions regarding asbestos cement pipes

Internationally, many nations are expediting replacement of asbestos cement pipes because of concerns that waterborne asbestos is contributing to increasing cancer rates, as well as the disruption and costs of frequent pipe breakages. The following are a few examples. No such commitment has been made in Canada, yet.

Scottish Water recently announced a plan to spend 143-million pounds to replace 6,000 kilometres of old asbestos cement water pipe in 15 years.[13]

Malaysia is even more ambitious, planning to replace almost 40,000 kilometres of asbestos cement water pipe by 2040. (Recent media reports extend the replacement timeframe to 2050).[14]

In **Tetu, Kenya**, the state is to replace ageing water pipes over health concerns including high rates of cancer according to a September 24, 2025 Government Advertising Agency news release.[15]

Conclusions

Canada supplied the world with 40% of its asbestos, but despite growing knowledge, Canada has been slow to regulate this hazardous material. Canada is over-due to issue and to act upon drinking water quality guidance, with the goal for particle loadings of all sizes to be *As Low As Reasonably Achievable* (ALARA). Canada has regulated asbestos in air, and existing materials in buildings and equipment are contained, labelled, and targeted for elimination.

Asbestos removal and disposal are guided by detailed occupational health and safety (OHS) and hazardous waste disposal rules and practices. Protocols are required for removal and disposal of asbestos cement pipes.

The Health Canada draft assessment has substantial methodological and scientific shortcomings, but the evidence is clear that asbestos causes cancer when it is ingested, as well as when it is inhaled.

The most recent, albeit incomplete, data indicates that approximately 14,000 km of deteriorating asbestos cement pipes deliver water to a substantial number of Canadian households and businesses. These aging pipes are breaking increasingly frequently, causing water outages and floods. Regardless of absence of Canadian laboratory quantification, where this aging infrastructure is in use, increasing asbestos levels in drinking water, showers, laundry, humidified air, etc. are exposing all ages to hazardous fibres. (Quantities of particles aerosolized vary with humidifier design.)

Asbestos is a potent carcinogen, and incidence of cancers—particularly colorectal cancer—are increasing rapidly in ever-younger Canadians and populations globally, with calls to identify early life exposure risk factors.[16,24] Although diet and other exposures are reasonably expected to be contributing to this scourge, the increasing ingestion of asbestos in many communities cannot be discounted. Knowledgeable citizens, clinical awareness and analytical capacity are essential to support informed care and epidemiological research. Informing citizens that asbestos residues pose no health concern, as done in Regina (Appendix 1), is counter to public health principles.

Across Canada, asbestos cement pipes were installed from the 1930s to the 1990s. Many jurisdictions still rely on extensive asbestos-cement pipe networks to supply drinking water (see sample maps in Appendix 2). Healthy drinking water is indeed a national priority, and expedited safe replacement of asbestos cement pipes fits the rubric of a “nation building project.” This is an opportunity for the country that led the world in use of asbestos, now to lead in cleanup with technology for efficient “trenchless” asbestos cement pipe removal, responsible asbestos disposal and pipe replacement. There is broad consensus that pipes must *not* be left in the ground, as this creates a toxic contaminated site that is highly likely to be disturbed in the future.

Water contamination measurement, and standard to protect public health

It is essential to establish a Canadian analytical method and laboratory capacity to test for asbestos in water. Canadian laboratories presently ship samples to the U.S.A.

There is no Canadian recommended limit for asbestos in drinking water. Thus, there is no routine water quality data on which to base decisions, let alone scientific research including epidemiology and biological identification (e.g., in tumor samples).

Coincidentally, gastrointestinal cancers (particularly colorectal cancers) are increasing rapidly in ever-younger Canadians.[25] Increasing ingestion of asbestos as aging pipes degrade and contaminate drinking water, bears investigation as a potential contributor, and appropriate action for safe replacement of essential infrastructure.

Small fibres may contribute to development of these cancers. International knowledge, epidemiological and experimental (animal) research, and regulation of other particulate matter (PM) include particles much smaller than 10 µm. Suggestions that phagocytosis will clear fibres shorter than 10 µm, supporting this size cutoff, are not consistent with many reports of smaller fibres in tumours, including citations in the consultation document. Public health should be protected with a standard to regulate asbestos that is consistent with other particulate matter such as smoke and industrial emissions, both of which have effects on multiple organs due to particles as well as toxic chemicals. The starting point is to address all asbestos particles 0.5 µm length and greater, as are measured by commercial laboratories in the U.S.A.

In summary, the proposed guidance document has many shortcomings, including errors of fact and interpretation. A precautionary, more fulsome synthesis and analysis would address remaining doubts that it can be hazardous to drink asbestos. Along with particular chemicals over generations, asbestos should be reasonably anticipated to be a contributor to the accelerating increases in cancers (particularly gastro-intestinal), in ever-younger Canadians and global citizens.

Reflection, in conclusion

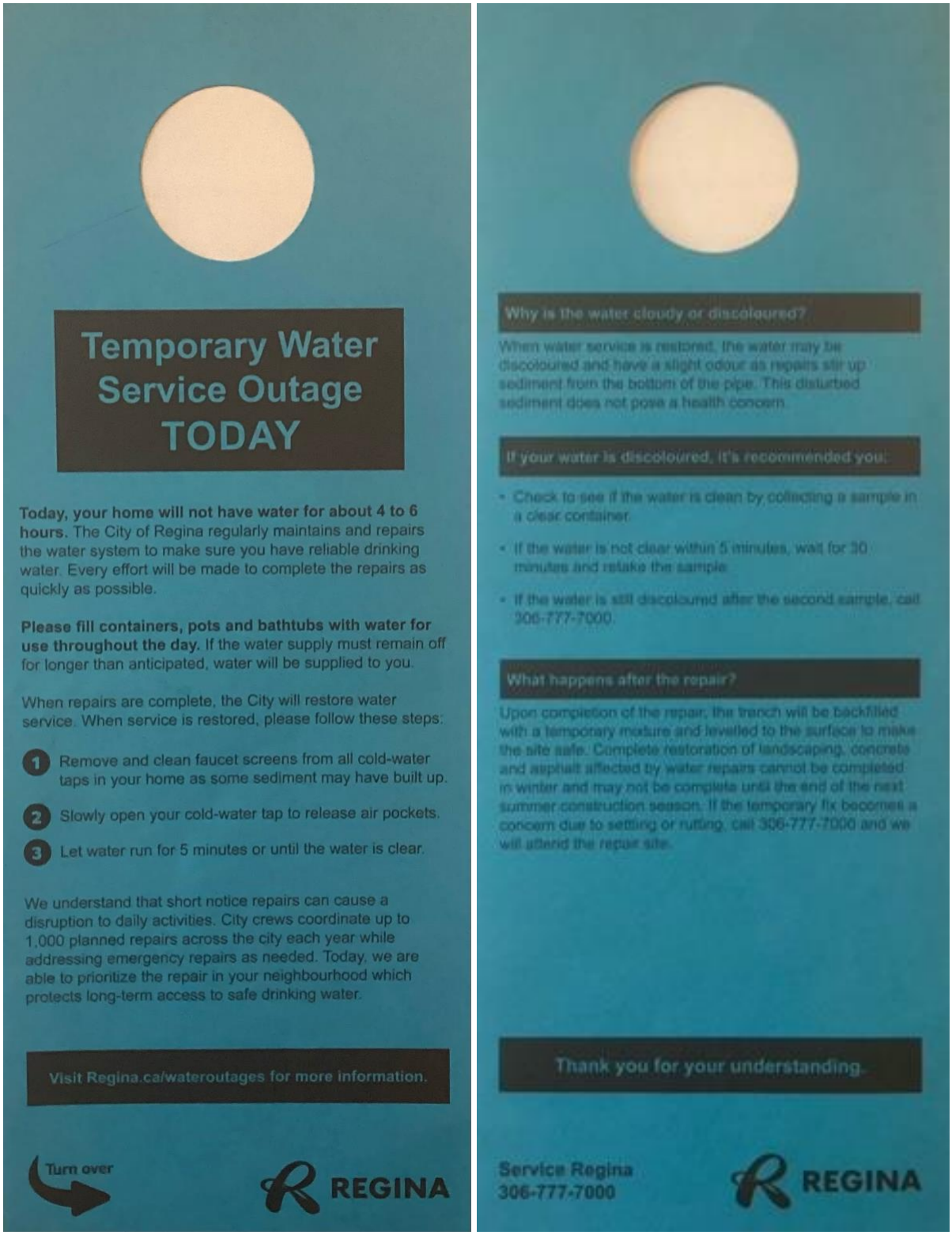
In 1977, IARC classified asbestos as a Group 1 carcinogen. That same year, the Science Council of Canada produced a report entitled *Regulatory Processes and Jurisdictional Issues in the Regulation of Hazardous Products in Canada*. It states:

> **"Among the six cases discussed in this report and in the Science Council's Policies and Poisons study, *the asbestos case is perhaps most indicative of the inadequacies of the Canadian regulatory process, both at the regulation-making and the compliance levels*."**

Today, a half century later, asbestos-cement drinking water pipes remain in use. These should be replaced urgently as a national priority, with technology to remove the pipes and to ensure robust waste management.

Appendix 1: Doorhanger following repair of an asbestos-cement pipe in Regina

Note reassurance that, “This disturbed sediment does not pose a health concern.”



Temporary Water Service Outage TODAY

Today, your home will not have water for about 4 to 6 hours. The City of Regina regularly maintains and repairs the water system to make sure you have reliable drinking water. Every effort will be made to complete the repairs as quickly as possible.

Please fill containers, pots and bathtubs with water for use throughout the day. If the water supply must remain off for longer than anticipated, water will be supplied to you.

When repairs are complete, the City will restore water service. When service is restored, please follow these steps:

1. Remove and clean faucet screens from all cold-water taps in your home as some sediment may have built up.
2. Slowly open your cold-water tap to release air pockets.
3. Let water run for 5 minutes or until the water is clear.

We understand that short notice repairs can cause a disruption to daily activities. City crews coordinate up to 1,000 planned repairs across the city each year while addressing emergency repairs as needed. Today, we are able to prioritize the repair in your neighbourhood which protects long-term access to safe drinking water.

Visit Regina.ca/wateroutages for more information.

Turn over

REGINA

Why is the water cloudy or discoloured?

When water service is restored, the water may be discoloured and have a slight odour as repairs stir up sediment from the bottom of the pipe. This disturbed sediment does not pose a health concern.

If your water is discoloured, it's recommended you:

- Check to see if the water is clean by collecting a sample in a clear container.
- If the water is not clear within 5 minutes, wait for 30 minutes and retake the sample.
- If the water is still discoloured after the second sample, call 306-777-7000.

What happens after the repair?

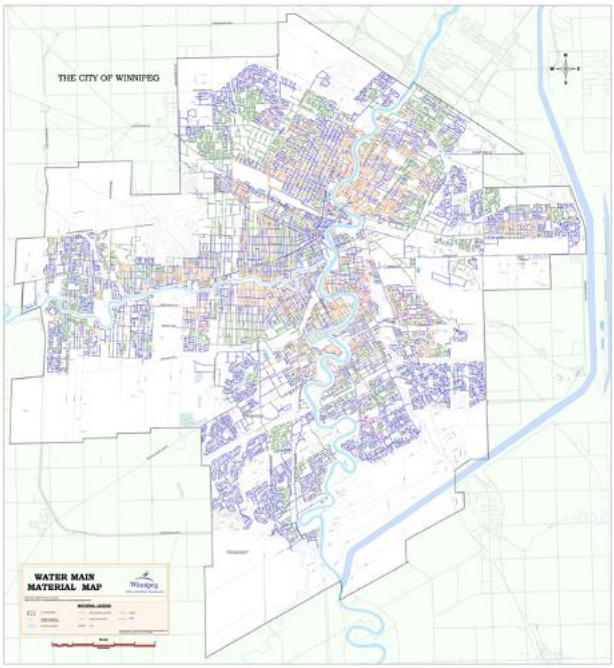
Upon completion of the repair, the trench will be backfilled with a temporary mixture and levelled to the surface to make the site safe. Complete restoration of landscaping, concrete and asphalt affected by water repairs cannot be completed in winter and may not be complete until the end of the next summer construction season. If the temporary fix becomes a concern due to settling or rutting, call 306-777-7000 and we will attend the repair site.

Thank you for your understanding.

Service Regina
306-777-7000

REGINA

Appendix 2: Sample waterworks maps with asbestos cement water pipes —Winnipeg and Regina



Winnipeg MB [26]

April 2023
740 km of A-C pipe
population: 850,000

Asbestos-cement pipes in green

Click image for full size

Regina, SK [27]

April 2023
500 km of AC pipe
population: 227,000

Asbestos-cement pipes in purple

Click image for full size—

REFERENCES

1. International Agency for Research on Cancer (IARC). Asbestos - IARC Monograph on the Evaluation of Carcinogenic Risk of Chemicals to Man [Internet]. Vol. 14. 1977 [cited 2026 Mar 10]. Available from: https://publications.iarc.who.int/Book-And-Report-Series/Iarc-Monographs-On-The-Identification-Of-Carcinogenic-Hazards-To-Humans/Asbestos-1977

2. Prevent Cancer Now. Where are Canada's asbestos cement drinking water pipes? Check the data for where you live [Internet]. 2025 Sep 30 [cited 2026 Mar 11]. Available from: https://preventcancernow.ca/where-are-canadas-asbestos-cement-drinking-water-pipes-check-the-data-for-where-you-live/

3. Brandi G, Tavolari S. Asbestos and Intrahepatic Cholangiocarcinoma. Cells. 2020 Feb 12;9(2):421. doi:10.3390/cells9020421 PubMed PMID: 32059499; PubMed Central PMCID: PMC7072580.

4. Grosso F, Croce A, Libener R, Mariani N, Pastormerlo M, Maconi A, et al. Asbestos fiber identification in liver from cholangiocarcinoma patients living in an asbestos polluted area: a preliminary study. Tumori J. 2019 Oct 1;105(5):404–10. doi:10.1177/0300891619839305

5. Kogan FM, Vanchugova NN, Frasch VN. Possibility of inducing glandular stomach cancer in rats exposed to asbestos. Occup Environ Med. 1987 Oct 1;44(10):682–6. doi:10.1136/oem.44.10.682 PubMed PMID: 3676121.

6. Szendröi M, Németh L, Vajta G. Asbestos bodies in a bile duct cancer after occupational exposure. Environ Res. 1983 Apr 1;30(2):270–80. doi:10.1016/0013-9351(83)90213-X

7. Toft P, Wigle D, Meranger JC, Mao Y. Asbestos and drinking water in Canada. Sci Total Environ. 1981 Apr 1;18:77–89. doi:10.1016/S0048-9697(81)80051-4

8. Millette JR, Clark PJ, Stober J, Rosenthal M. Asbestos in water supplies of the United States. Environ Health Perspect. 1983 Nov;53:45–8. doi:10.1289/ehp.835345

9. Go J, Farhat N, Leingartner K, Insel EI, Momoli F, Carrier R, et al. Review of epidemiological and toxicological studies on health effects from ingestion of asbestos in drinking water. Crit Rev Toxicol. 2024 Nov 25;54(10):856–94. doi:10.1080/10408444.2024.2399840 PubMed PMID: 39436319.

10. Koehoorn M, McLeod CB, Fan J, Arrandale VH, Davies HW, Dement JM, et al. Occupational asbestos exposure and gastrointestinal cancers: systematic review and meta-analyses. Occup Environ Med. 2024 Dec 1;81(12):639–46. doi:10.1136/oemed-2024-109707 PubMed PMID: 39929711.

11. Dodson RF, Atkinson MAL, Levin JL. Asbestos fiber length as related to potential pathogenicity: A critical review. Am J Ind Med. 2003;44(3):291–7. doi:10.1002/ajim.10263

12. EMSL | Asbestos in Water [Internet]. [cited 2025 Jun 11]. Available from: https://www.emsl.com/Services.aspx?action=list&ServiceCategoryID=52

13. Hakimian R. Scottish Water details £13.4bn business plan including targeted investments in assets. New Civil Engineer [Internet]. 2026 Mar 3 [cited 2026 Mar 20]. Available from: https://www.newcivilengineer.com/latest/scottish-water-details-13-4bn-business-plan-including-targeted-investments-in-assets-03-03-2026/

14. Media Selangor. Fed govt sets 2040 deadline to replace all critical asbestos cement water pipes [Internet]. 2025 Dec 4 [cited 2026 Mar 20]. Available from: https://newswav.com/article/fed-govt-sets-2040-deadline-to-replace-all-critical-asbestos-cement-water-p-A2512_nc2cvj

15. KNA. State to replace ageing water pipes in Tetu over health concerns. The Star, Kenya [Internet]. 2025 Sep 19 [cited 2026 Mar 20]. Available from: https://www.the-star.co.ke/counties/central/2025-09-19-state-to-replace-ageing-water-pipes-in-tetu-over-health-concerns

16. Brenner DR, Heer E, Sutherland RL, Ruan Y, Tinmouth J, Heitman SJ, et al. National Trends in Colorectal Cancer Incidence Among Older and Younger Adults in Canada. JAMA Netw Open. 2019 Jul 31;2(7):e198090. doi:10.1001/jamanetworkopen.2019.8090 PubMed PMID: 31365108; PubMed Central PMCID: PMC6669779.

17. Government of Canada, Legislative Services Branch. Prohibition of Asbestos and Products Containing Asbestos Regulations [Internet]. 2018 Dec 30. Available from: https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-196/FullText.html

18. WorkSafe BC. Asbestos-containing pipes in municipal underground works projects [Internet]. 2018. Available from: https://www.worksafebc.com/en/resources/health-safety/information-sheets/asbestos-containing-pipes-in-municipal-underground-works-projects?lang=en

19. WorkSafeBC. OHS Regulation Part 6: Substance Specific Requirements [Internet]. [cited 2026 Mar 15]. Available from: https://www.worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-regulation/part-06-substance-specific-requirements#SectionNumber:6.25

20. Asbestos in Water Testing Overview & FAQ - Laboratory Testing [Internet]. 2025 Nov 16 [cited 2026 Feb 21]. Available from: https://laboratorytesting.com/resources/asbestos/asbestos-in-water-testing-overview-faq/

21. Prevent Cancer Now. Canada's asbestos cement water pipe research — a brief history [Internet]. 2023 [cited 2024 Mar 13]. Available from: https://preventcancernow.ca/asbestos-cement-water-pipe-research-in-canada/

22. https://UKWIR.org [Internet]. [cited 2026 Mar 12]. Asbestos Cement water mains deterioration and failure prediction models. Available from: https://UKWIR.org/water-industry-technical-report?object=15332497-3056-4e13-b1c2-ce683c829042

23. Donham KJ, Berg JW, Will LA, Leininger JR. The effects of long-term ingestion of asbestos on the colon of F344 rats. Cancer. 1980;45(S5):1073–84. doi:10.1002/1097-0142(19800315)45:5+<1073::AID-CNCR2820451308>3.0.CO;2-W

24. Murphy CC, Zaki TA. Changing epidemiology of colorectal cancer — birth cohort effects and emerging risk factors. Nat Rev Gastroenterol Hepatol. 2024 Jan;21(1):25–34. doi:10.1038/s41575-023-00841-9

25. O'Sullivan DE, Hilsden RJ, Ruan Y, Forbes N, Heitman SJ, Brenner DR. The incidence of young-onset colorectal cancer in Canada continues to increase. Cancer Epidemiol. 2020 Dec 1;69:101828. doi:10.1016/j.canep.2020.101828

26. Winnipeg Water Main Material Map [Internet]. City of Winnipeg; 2023 [cited 2026 Mar 30]. Available from: https://legacy.winnipeg.ca/waterandwaste/pdfs/water/WATER%20MAIN%20BY%20MATERIAL.pdf

27. City of Regina. Regina Water Main Pipes Material Categories [Internet]. 2023. Available from: https://openregina.ca/dataset/30c8dcec-0f5f-4b80-bede-5fe276ac8fe5/resource/80cf0503-085b-4cbc-9674-ddd98d3d81b9/download/map--water-main-pipes.pdf