



WITHDRAWAL OF SELECT
GUIDELINES FOR

CANADIAN DRINKING WATER QUALITY



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Également disponible en français sous le titre :
Retrait de certaines recommandations pour la qualité de l'eau potable au Canada

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Publication date: January 2022

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Cat.: H144-85/2021E-PDF
ISBN: 978-0-660-38710-9
Pub.: 210063



EXECUTIVE SUMMARY

Health Canada, in collaboration with the Federal-Provincial-Territorial Committee on Drinking Water, is withdrawing the existing Guidelines for Canadian Drinking Water Quality (GCDWQ) for 17 chemical substances, including 13 pesticides. It was determined that GCDWQ are no longer required since these contaminants are unlikely to be found in Canadian drinking water at levels that may pose a risk to human health.

The guidelines for the following pesticides are withdrawn: azinphos-methyl, carbaryl, carbofuran, diazinon, diclofop-methyl, diuron, metolachlor, paraquat, phorate, picloram, simazine, terbufos, and trifluralin. The other chemical substances withdrawn are 1,2-dichlorobenzene, 2,4-dichlorophenol, 2,3,4,6-tetrachlorophenol and monochlorobenzene.

This document summarizes the current available information supporting the withdrawal of 17 GCDWQ, taking into account any key updates in the current scientific information for these parameters, changes in registration status (for pesticides) and Canadian exposures from drinking water monitoring data provided by the provinces and territories.





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PART A.

WITHDRAWAL OF SELECT GUIDELINES FOR CANADIAN DRINKING WATER QUALITY

A.1 Guideline Development and Review Process

The **Guidelines for Canadian Drinking Water Quality (GCDWQ)** are developed by Health Canada in collaboration with the Federal-Provincial-Territorial Committee (CDW) to protect the health of all Canadians by establishing maximum acceptable concentrations (MACs) for contaminants in drinking water. Each guideline is developed based on current, published scientific studies related to health effects and operational considerations and, in some cases, aesthetic effects. Health-based guidelines are established based on comprehensive reviews of the known health effects associated with each contaminant, exposure levels and the availability of appropriate treatment and analytical technologies.

Health Canada, in collaboration with the CDW, generally establishes GCDWQ for chemical contaminants that meet the following criteria:

1. Exposure to the contaminant could lead to adverse health effects;
2. The contaminant is frequently detected, or could be expected to be found, in a large number of drinking water supplies throughout Canada; and
3. The contaminant is detected, or could be expected to be detected, at a level that could potentially pose a risk to human health.

As part of the prioritization process for guideline development, Health Canada periodically assesses the available information on existing chemical drinking water guidelines to determine whether they are relevant in the current Canadian context and whether they should be updated or withdrawn. This review incorporates information from the current scientific literature as well as Canadian drinking water monitoring data. In the case of pesticides, additional information such as Canadian sales data, registration status and current or updated acceptable daily intake (ADI) values, as established by Health Canada's Pest Management Regulatory Agency (PMRA), are also considered.



The GCDWQ are developed on an assessment of the hazard (the inherent toxicity of a chemical) and the risk of adverse health effects associated with exposure to chemical contaminants in drinking water. This is done to determine an acceptable level to which the general population, or susceptible subpopulations, can be exposed over a lifetime (considered 70 years) with no adverse health impacts expected. This acceptable level is known as the MAC.

A.2 Withdrawal of Select Guidelines

As provinces and territories are generally responsible for drinking water quality in their jurisdiction, they each determine how they use the GCDWQ to address their specific needs. Some provinces and territories automatically adopt health-based GCDWQ by reference, thereby creating an obligation to monitor for these drinking water contaminants. Drinking water monitoring data from the provinces and territories are used as an indicator of the actual exposure of Canadians to chemical contaminants in drinking water. Over time, a guideline may no longer be needed, as science demonstrates that adverse health effects occur at levels much higher than were previously assessed, or routine monitoring data indicates that specific chemical contaminants are not generally found in drinking water systems. In the case of pesticides, a change in registration status may mean that the product is no longer in use in Canada, thus removing the potential for that pesticide to enter drinking water sources. The withdrawal of a GCDWQ would remove the need or obligation of provinces and territories to routinely monitor for the given contaminant, thus allowing Canadian jurisdictions to focus their efforts on contaminants that continue to be a concern for human health.

Based on current information, Health Canada is withdrawing the GCDWQ for the following:

- » 1,2-dichlorobenzene
- » 2,4-dichlorophenol
- » 2,3,4,6-tetrachlorophenol
- » azinphos-methyl
- » carbaryl
- » carbofuran
- » diazinon
- » diclofop-methyl
- » diuron
- » metolachlor
- » monochlorobenzene
- » paraquat
- » phorate
- » picloram
- » simazine
- » terbufos
- » trifluralin

The withdrawal of the above guidelines means that published health guidance, in the form of drinking water technical documents, will no longer be available on Health Canada's website. However, in the event that any of these chemical contaminants are detected in a drinking water supply, federal, provincial or territorial jurisdictions can request that Health Canada provide up-to-date health guidance to help address specific needs, such as addressing a contamination event or interpreting source water monitoring data. In the case of pesticides, such health guidance will be developed based on the most up-to-date scientific assessments by Health Canada's PMRA. Under the authority of the *Pest Control Products Act*, PMRA conducts stringent, science-based evaluations to ensure that pesticides registered for use in Canada pose acceptable risks to human health and the environment. It also re-evaluates registered pesticides to ensure the products meet current scientific standards. For pesticides where drinking water quality guidelines no longer exist, up-to-date ADIs are available from PMRA for determining appropriate health guidance. For those chemicals that are not pesticides, health guidance can be provided to federal, provincial and territorial jurisdictions on a case-by-case basis through evaluation of current scientific information and risk assessments by other international organizations.

As part of its drinking water guideline review process, Health Canada monitors new research and scientific information to ensure existing guidelines are updated to reflect advances in the scientific literature and risk assessment methods, as well as assessments by international organizations. To this end, Health Canada has a cyclical process for prioritizing the revision of existing guidelines, for the development of new guidelines, or the withdrawal of guidelines that are no longer needed. This prioritization process is conducted in collaboration with the provinces, territories, and other federal departments. For more information on the prioritization process, please consult [Health Canada's drinking water quality website](#).



PART B.

KEY INFORMATION SUPPORTING WITHDRAWN GUIDELINES

Table 1 provides a list of the pesticides that have been phased out and are no longer expected to be found in water. For the chemical contaminants identified in Table 2 and Table 3, monitoring data provided by the provinces and territories indicate that they are rarely found in drinking water, and only at levels well below their respective MACs. Based on this information, select GCDWQ are no longer required because these contaminants are unlikely to be found in Canadian drinking water at levels that may pose a risk to human health.

Table 1. Phased-out pesticides

Parameter	MAC (mg/L) (date established)	Key health endpoint	Year phased out
Azinphos-methyl	0.02 (Health Canada, 1989b)	Decreased plasma cholinesterase in rats	Decision in 2006 (Health Canada, 2006a); final use in 2012 (Health Canada, 2007)
Carbofuran	0.09 (Health Canada, 1991a)	Cholinesterase inhibition and growth suppression in rats	2010 (Health Canada, 2010)
Diclofop-methyl	0.009 (Health Canada, 1987a)	Liver effects in rats and mice	2011 ² (Health Canada, 2011)
Metolachlor ¹	0.05 (Health Canada, 1986a)	Male rat reproductive effects	2006 ²
Terbufos	0.001 (Health Canada, 1987b)	Cholinesterase inhibition in dogs	2012 (Health Canada, 2004a; 2008a)

¹ Metolachlor only; does not include S-metolachlor or R-metolachlor

² All uses were voluntarily discontinued by the registrant (Health Canada, 2020).

Table 2. Registered pesticides unlikely to be found in drinking water at levels that could lead to adverse health effects. Canadian monitoring data indicate that exposure from drinking water is rare, and when detected, levels are well below the MAC.

Parameter	MAC (mg/L) (reference)	Key health endpoint; Acceptable Daily Intakes (ADI)/Negligible Daily Intake (NDI) used to derive MAC; New ADI (mg/kg bw per day)	Sales of Active Ingredient (AI) in Canada ¹ (kg) (Health Canada, 2018)	Summary Sample Data ² (total detects/total samples; %)	Maximum Level Detected ² (mg/L)
Carbaryl	0.09 (Health Canada, 1991b)	Effects on the kidney in humans; ADI = 0.01; New ADI = 0.011 (Health Canada, 2009a)	> 25,000, < 100,000	14/5006 0.3%	0.00018
Diazinon ³	0.02 (Health Canada, 1986c)	Cholinesterase inhibition in dogs and humans; ADI = 0.002; New ADI = 0.0002 (Health Canada, 2005)	> 1000, < 5000	14/5518 0.3%	0.00043
Diuron	0.15 (Health Canada, 1987c)	Body weight loss, increased liver weight, erythroid hyperplasia and decreased haematological values in dogs; ADI = 0.0156; New ADI = 0.003 (Health Canada, 2006b)	> 5000, < 10,000	8/5691 0.1%	0.001
Paraquat	0.01 (Health Canada, 1986d)	Decreased body weight and internal organ weights; effects on the lungs and kidneys in rats and dogs; ADI = 0.001; New ADI = 0.0045 (Health Canada, 2004b)	< 500	86/4228 2%	0.0065



Parameter	MAC (mg/L) (reference)	Key health endpoint; Acceptable Daily Intakes (ADI)/Negligible Daily Intake (NDI) used to derive MAC; New ADI (mg/kg bw per day)	Sales of Active Ingredient (AI) in Canada ¹ (kg) (Health Canada, 2018)	Summary Sample Data ² (total detects/total samples; %)	Maximum Level Detected ² (mg/L)
Phorate	0.002 (Health Canada, 1986e)	Cholinesterase inhibition in dogs and rats; ADI = 0.0002; New ADI = 0.00025 (Health Canada, 2003)	> 10,000, < 25,000	2/5621 0.04%	0.0013
Picloram	0.19 (Health Canada, 1988)	Changes in liver and body weight and clinical parameters in rats; NDI = 0.02; New ADI = 0.2 (Health Canada, 2007)	> 10,000, < 25,000	4/6618 0.06%	0.00006
Simazine	0.01 (Health Canada, 1986f)	Reduced body weight, increased serum alkaline phosphatase glutamic-oxaloacetic and slight hyperplasia of the thyroid gland in dogs; NDI = 0.0013; New ADI = 0.0018 (Health Canada, 2009b)	> 10,000, < 25,000	6/7485 0.08%	0.00005
Trifluralin	0.045 (Health Canada, 1989c)	Changes in liver and spleen weights and serum chemistry in dogs; NDI = 0.0048; New ADI = 0.024 (Health Canada, 2008b)	> 100,000, < 500,000	8/7661 0.1%	0.00019

¹ Reported sales of pesticides are for Canada; sales data by province/territory or region are not provided in the Health Canada (2018) report.

² Based on monitoring data provided by members of the Federal-Provincial-Territorial Committee on Drinking Water; Alberta Environment (2015); Manitoba Conservation and Water Stewardship (2015); Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques (2015); New Brunswick Department of Health (2015); Nova Scotia Environment (2015); Ontario Ministry of the Environment (2015); Prince Edward Island Department of Communities, Land and Environment (2015); and Saskatchewan Water Security Agency (2015). Total samples refers to number of raw, treated and distribution samples combined.

³ Diazinon: Several uses were phased out by 2016; risk mitigation measures for continued uses are outlined in Health Canada (2017).

Table 3. Other chemicals unlikely to be found in drinking water at levels that could lead to adverse health effects. Canadian monitoring data indicate that exposure from drinking water is rare, and when detected, levels are well below the MAC.

Parameter	MAC (mg/L) (date established)	Key health endpoint; ADI used to derive MAC (mg/kg bw per day)	Common releases to water	Summary Sample Data ¹ (total detects/ total samples)	Maximum level detected ¹ (mg/L)
1,2-dichlorobenzene	0.2 (Health Canada, 1987d)	Changes in serum cholesterol, protein and glucose in rats; ADI = 0.021	Releases or spills from industrial effluents	4/31307 0.01%	0.0002
2,4-dichlorophenol	0.9 (Health Canada, 1987e)	Slight changes in liver histopathology in male mice; ADI = 0.1	By-product of drinking water disinfection with chlorine; releases from industrial effluents	11/13305 0.08%	0.0007
2,3,4,6-tetrachlorophenol	0.1 (Health Canada, 1987f)	Embryotoxicity in rats; ADI = 0.01	By-product of drinking water disinfection with chlorine; industrial effluents and use of pesticides	2/13050 0.02%	0.0004
Mono-chlorobenzene	0.08 (Health Canada, 1987g)	Reduced survival and body weight gain; liver and kidney effects in mice and rats; ADI = 0.0089	Releases or spills from industrial effluents	2/26710 0.007%	0.00025

¹ Based on monitoring data provided by members of the Federal-Provincial-Territorial Committee on Drinking Water; Alberta Environment (2015); Manitoba Conservation and Water Stewardship (2015); Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques (2015); New Brunswick Department of Health (2015); Nova Scotia Environment (2015); Ontario Ministry of the Environment (2015); and Saskatchewan Water Security Agency (2015). Total samples refer to number of raw, treated and distribution samples combined.





PART C.

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C.2 List of Abbreviations

ADI	acceptable daily intake
AI	active ingredient
CDW	Federal-Provincial-Territorial Committee on Drinking Water
GCDWQ	Guidelines for Canadian Drinking Water Quality
MAC	maximum acceptable concentration
NDI	negligible daily intake
PMRA	Pest Management Regulatory Agency
US EPA	United States Environmental Protection Agency
WHO	World Health Organization

