

Users are advised to consult the Canadian Environmental Quality Guidelines introductory text, factsheet, and/or protocols for specific information and implementation guidance pertaining to each environmental quality guideline.

Copper

Parameter 1: INORGANIC

Parameter 3: Metals

Water Quality for the Protection of Aquatic Life

Freshwater

Concentration ($\mu\text{g/L}$)

Equation

The CWQG for copper is related to water hardness (as CaCO_3):

When the water hardness is 0 to < 82 mg/L, the CWQG is $2 \mu\text{g/L}$

At hardness ≥ 82 to ≤ 180 mg/L the CWQG is calculated using this equation (see calculator below)

$$\text{CWQG } (\mu\text{g/L}) = 0.2 * e^{\{0.8545[\ln(\text{hardness})]-1.465\}}$$

At hardness > 180 mg/L, the CWQG is $4 \mu\text{g/L}$

If the hardness is unknown, the CWQG is $2 \mu\text{g/L}$

The online calculator (below) will return the correct value over the entire range of hardness.

Enter water hardness here:

mg/L CaCO_3

Calculated copper guideline:

$\mu\text{g/L}$ Cu

Note: No fact sheet created. For more information on this guideline, please refer to Canadian Water Quality Guidelines (CCREM 1987). Out of convenience, this guideline was presented as a range depending upon the water hardness in earlier versions of CCME (1999). It is now presented as an equation as it originally appears in CCREM (1987).

Date	1987
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Marine

Concentration (µg/L)	No data
Date	No data

Water Quality for the Protection of Agriculture

Irrigation

Concentration (µg/L)	Variable
= 200 µg/L for cereals = 1000 µg/L for tolerant crops No fact sheet created. For more information on this guideline, please refer to Canadian Water Quality Guidelines (CCREM 1987).	
Date	1987

Livestock

Concentration (µg/L)	Variable
= 500 µg/L for sheep, 1000 µg/L for cattle, 5000 µg/L for swine and poultry No fact sheet created. For more information on this guideline, please refer to Canadian Water Quality Guidelines (CCREM 1987).	
Date	1987

Sediment Quality for the Protection of Aquatic Life

Further documentation on these guidelines can be found in the Canadian Environment Quality Guidelines. [Download Factsheet](#)

Freshwater

Concentration (µg/kg dry weight) - ISQG				35 700
Guideline	% ≤ ISQG	ISQG < % < PEL	ISQG % ≥ PEL	
Copper	4	38	44	
Concentration (µg/kg dry weight) - PEL				197 000
Guideline	% ≤ ISQG	ISQG < % < PEL	ISQG % ≥ PEL	
Copper	4	38	44	
Date				1998

Marine

Concentration ($\mu\text{g}/\text{kg}$ dry weight) - ISQG				18 700
Guideline	% \leq ISQG	ISQG < % < PEL	ISQG % \geq PEL	
Copper	9	22	56	
Concentration ($\mu\text{g}/\text{kg}$ dry weight) - PEL				108 000
Guideline	% \leq ISQG	ISQG < % < PEL	ISQG % \geq PEL	
Copper	9	22	56	
Date				1998

Soil Quality for the Protection of Environmental and Human Health

Further documentation on these guidelines can be found in the Canadian Environment Quality Guidelines.

[Download Factsheet](#)

Concentration (mg/kg dry weight) - Agricultural	63
Data are sufficient and adequate to calculate a Soil Quality Guideline for Human Health (SQG_{HH}) and a Soil Quality Guideline for Environmental health (SQG_{E}). Therefore the soil quality guideline is the lower of the two and represents a fully integrated de novo guideline for this land use, derived in accordance with the soil protocol (CCME 1996;2006). The corresponding interim soil quality criterion (CCME 1991) is superseded by the soil quality guideline. For guidelines derived prior to 2004, differentiation between soil texture (coarse/fine) is not applicable.	
Concentration (mg/kg dry weight) - Residential / parkland	63
Data are sufficient and adequate to calculate a Soil Quality Guideline for Human Health (SQG_{HH}) and a Soil Quality Guideline for Environmental health (SQG_{E}). Therefore the soil quality guideline is the lower of the two and represents a fully integrated de novo guideline for this land use, derived in accordance with the soil protocol (CCME 1996;2006). The corresponding interim soil quality criterion (CCME 1991) is superseded by the soil quality guideline. For guidelines derived prior to 2004, differentiation between soil texture (coarse/fine) is not applicable.	
Concentration (mg/kg dry weight) - Commercial	91
Data are sufficient and adequate to calculate a Soil Quality Guideline for Human Health (SQG_{HH}) and a Soil Quality Guideline for Environmental health (SQG_{E}). Therefore the soil quality guideline is the lower of the two and represents a fully integrated de novo guideline for this land use, derived in accordance with the soil protocol (CCME 1996;2006). The corresponding interim soil quality criterion (CCME 1991) is superseded by the soil quality guideline. For guidelines derived prior to 2004, differentiation between soil texture (coarse/fine) is not applicable.	
Concentration (mg/kg dry weight) - Industrial	91
Data are sufficient and adequate to calculate a Soil Quality Guideline for Human Health	

(SQG_{HH}) and a Soil Quality Guideline for Environmental health (SQG_E). Therefore the soil quality guideline is the lower of the two and represents a fully integrated de novo guideline for this land use, derived in accordance with the soil protocol (CCME 1996;2006). The corresponding interim soil quality criterion (CCME 1991) is superseded by the soil quality guideline.

For guidelines derived prior to 2004, differentiation between soil texture (coarse/fine) is not applicable.

Date	1999
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Tissue Residue Quality for the Protection of Wildlife Consumer of Aquatic Biota

Concentration (µg/kg diet wet weight)	<i>No data</i>
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Date	<i>No data</i>
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