tern

Know Your Water Standards: a guide to your water

pH

The pH describes the acidity of water. This measurement may aid in the detection of dissolved organic or inorganic substances contributing to drinking water quality (WHO, 2017; EPA, 2017).

Est. Range

WHO - EPA: 6.5 -8.5

Target Range*

WHO - EPA: 6.5 -8.5

*Target Range is reccommended for all populations

TDS

Total Dissolved Solids (TDS) is a measure of dissolved inorganic and organic substances present in water. Though not limited to naturally occurring minerals, they are a common contributor to elevated TDS levels. Typical minerals include calcium, magnesium, chloride, and iron.
(WHO, 2017; EPA, 2017; Health Canada, 1991)

Est. Range

WHO: <600 ppm EPA: <500 ppm

Target Range*

EPA: <500 ppm

*Target Range is reccommended for all populations

Hardness

Total hardness measures concentrations of naturally occurring calcium and magnesium. Elevated levels cause soap scum, a whitish-gray film, and scale formation which degrades water heater elements and sink fixtures. High levels may cause undesirable taste to drinking water (WHO, 2017; Health Canada, 1995).

Est. Range

WHO: 100-200 ppm

Target Range*

Health Canada: 80-100 ppm

*Target Range is reccommended for all populations

tern

Lead

Elevated lead levels result from corrosion of lead pipes and soldering in aging infrastructure. Lead concentrations cause neurodevelopmental issues in infants and children, a vulnerable population. Adults experience kidney dysfunction among other serious medical conditions (WHO, 2017; EPA, 2017).

Est. Range

WHO: <0.01ppm EPA: 0.015 ppm (action level)

Target Range*

EPA: 0 ppm (MCLG)

At risk populations include: infants, children, pregnant or nursing women, and those with weakened immune systems.

Fluoride

Fluoride is a mineral found naturally in water (trace amounts) and consumable products. In select countries, municipalities add controlled concentrations of fluoride to prevent tooth decay. Large concentrations of fluoride cause enamel and skeletal fluorosis, conditions which weaken the structure of teeth and bones (WHO, 2017; EPA, 2017; EPA, 2017).

Est. Range

WHO: 1.5 ppm EPA: 4 ppm

Target Range

EPA: 1.5 ppm

Controlled levels of fluoride reduces tooth decay.

Iron

Iron is naturally occurring with elevations due to industrial activities and pipe corrosion. Iron can give water a reddish tint that stains fixtures and appliances. Elevated iron in water produces a metallic, bitter taste (WHO, 2017; EPA, 2017).

Est. Range

WHO: 0.3 ppm EPA: 0.3 ppm (SMCL)

Target Range*

EPA: 0.3 ppm (SMCL)

*Target Range is reccommended for all populations

tern

Copper

Copper is an essential nutrient. Detectable levels in drinking water are attributed to copper plumbing corrosion. Elevated levels cause metallic tasting water, blue-green stains, and gastrointestinal irritation. Chronic exposure may cause liver and kidney damage (WHO, 2017; EPA, 2017; EPA, 2017; Health Canada, 2008).

Est. Range

WHO: 2 ppm EPA: 1.3 ppm (MCL)

Target Range*

Health Canda: ≤1 ppm

At risk populations include: infants, children, pregnant or nursing women, and those with weakened immune systems.

Chroimum VI

Chromium-VI is a naturally occurring element. Commonly, detectable levels in water are due to industrial effluent. Inhalation of chromium-VI is a known carcinogen. Studies of populations with high levels of chromium-VI in drinking water have inconclusive results. Chromium-VI is a highly controversial contaminant that is not currently regulated by the EPA. Current regulations include chromium-III, which occurs naturally in foods and is healthy in small amounts (WHO, 2017; EPA, 2017; ATSDR, 2019; SWRCB, 2019).

Est. Range

WHO/Health Can: 0.05 ppm EPA: 0.1 ppm

Target Range

SWRCB: 0.01 ppm

Controlled levels of fluoride reduces tooth decay.

Chlorine

Chlorine is a natural element used to treat water of bacterial and microbial growth. Some water treatment plants combine chlorine with ammonia to create chloramine. Chloramine has reduced taste and odor, longer lifetime, and zero rust impact to infrastructure. High chlorine levels cause stomach irritation and discomfort. Exposure to the skin, eyes, nose, and throat cause similar irritation and inflammation. (WHO, 2017; EPA, 2017).

Est. Range

WHO: 5 ppm EPA: 4 ppm

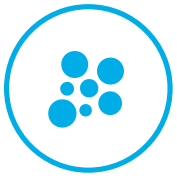
Target Range*

EPA: 4 PPM

*Target Range is reccommended for all populations

tern

Turbidity



Turbidity measures the cloudiness of water caused by suspended particles of sand, silt, and clay, and may include minerals, chemicals, bacteria or algae. Levels above EPA/WHO recommendations may indicate bacterial contamination, disease-causing microbes or parasites (WHO, 2017; EPA, 2018, Health Canada, 2012).

Est. Range

WHO: 4 NTU EPA: 1 NTU

Target Range*

Health Can: 0.3 NTU

At risk populations include: infants, children, pregnant or nursing women, and those with weakened immune systems.

Abreviation/Acronyms

MCL: Maximum Contaminant Level- MCLs are mandatory water quality standards set by the EPA for drinking water contaminants. MCL is the maximum amount allowed in draining water for contaminants that present a risk to human health.

SMCL: Secondary Maximum Contaminant Level. These levels are guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor. The EPA does not enforce SMCLs.

MCLG: Maximum Contaminant Level Goal - Contaminant level in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are not enforced by the EPA.

Action Level: Action Level requires water utilities to sample specific number of samples in specific locations and verify that 90% of samples are below this level.

EPA: Environmental Protection Agency

SWRCB: State Water Resources Control Board: California Water Boards

CDC: Center for Disease Control

WHO: World Health Organization

ATSDR: Agency for Toxic Substances and Disease Registry

NTU: Nephelometric Turbidity Unity

PPM: Parts Per Million

PPB: Parts Per Billion

tern

pH

- "Guidelines for Drinking-water Quality: Fourth Edition Incorporating The First Addendum." World Health Organization (WHO), 2017, pp. 370-373, https://www.who.int/
- "Secondary Drinking Water Standards: Guidance for Nuisance Chemicals." Environmental Protection Agency (EPA),2017, https://www.epa.gov/dwstandardsregulations/

TDS

- "Guidelines for Drinking-water Quality: Fourth Edition Incorporating The First Addendum." World Health Organization (WHO), 2017, pp. 370-373, https://www.who.int/
- "Secondary Drinking Water Standards: Guidance for Nuisance Chemicals." Environmental Protection Agency (EPA),2017, https://www.epa.gov/dwstandardsregulations/
- "Guidelines for Canadian Drinking Water Quality: Guideline Technical Document- Total Dissolved Solids (TDS)."Government of Canada: Health Canada, 2009, https://www.canada.ca/TDS.

Hardness

- "Guidelines for Drinking-water Quality: Fourth Edition Incorporating The First Addendum." World Health Organization (WHO), 2017, pp. 370-373, https://www.who.int/
- "Guidelines for Canadian Drinking Water Quality: Guideline Technical Document - Hardness." Government of Canada: Health Canada, 2009, https://www.canada.ca/hardness.

Lead

- "Guidelines for Drinking-water Quality: Fourth Edition Incorporating The First Addendum." World Health Organization (WHO), 2017, pp. 370-373, https://www.who.int/
- "Secondary Drinking Water Standards: Guidance for Nuisance Chemicals." Environmental Protection Agency (EPA),2017, https://www.epa.gov/dwstandardsregulations/

Fluoride

- "Guidelines for Drinking-water Quality: Fourth Edition Incorporating The First Addendum." World Health Organization (WHO), 2017, pp. 370-373, https://www.who.int/
- "Secondary Drinking Water Standards: Guidance for Nuisance Chemicals." Environmental Protection Agency (EPA),2017, https://www.epa.gov/dwstandardsregulations/

Iron

- "Guidelines for Drinking-water Quality: Fourth Edition Incorporating The First Addendum." World Health Organization (WHO), 2017, pp. 370-373, https://www.who.int/
- "Secondary Drinking Water Standards: Guidance for Nuisance Chemicals." Environmental Protection Agency (EPA),2017, https://www.epa.gov/dwstandardsregulations/

Copper

- "Guidelines for Drinking-water Quality: Fourth Edition Incorporating The First Addendum." World Health Organization (WHO), 2017, pp. 370-373, https://www.who.int/
- "Secondary Drinking Water Standards: Guidance for Nuisance Chemicals." Environmental Protection Agency (EPA),2017, https://www.epa.gov/dwstandardsregulations/
- "Guidelines for Canadian Drinking Water Quality: Guideline Technical Document - Copper." Government of Canada: Health Canada, 2008, https://www.canada.ca/copper.

Chromium VI

- "Guidelines for Drinking-water Quality: Fourth Edition Incorporating The First Addendum." World Health Organization (WHO), 2017, pp. 370-373, https://www.who.int/
- "Secondary Drinking Water Standards: Guidance for Nuisance Chemicals." Environmental Protection Agency (EPA),2017, https://www.epa.gov/dwstandardsregulations/
- "Public Health Statement: Chromium (CAS # 7440-47-3)." Agency for Toxic Substances and Disease Registry (ATSDR), 2012, https://www.atsdr.cdc.gov/ToxProfiles/tp7-c1-b.pdf.
- "Chromium- 6 Drinking Water MCL." State Water Resources Control Board: California Water Boards (SWRCB),2018, https://www.waterboards.ca.gov.

Chlorine

- "Guidelines for Drinking-water Quality: Fourth Edition Incorporating The First Addendum." World Health Organization (WHO), 2017, pp. 370-373, https://www.who.int/
- "Secondary Drinking Water Standards: Guidance for Nuisance Chemicals." Environmental Protection Agency (EPA),2017, https://www.epa.gov/dwstandardsregulations/

Turbidity

- "Guidelines for Drinking-water Quality: Fourth Edition Incorporating The First Addendum." World Health Organization (WHO), 2017, pp. 370-373, https://www.who.int/
- National Primary Drinking Water Regulations." Environmental Protection Agencies (EPA), 22 Mar. 2018. https://www.epa.gov/ground-water-and-drinking-water/
- "Guidelines for Canadian Drinking Water Quality: Guideline Technical Document - Turbidity." Government of Canada: Health Canada, 2014, https://www.canada.ca/turbidity.