Near North Laboratories Inc.

Environmental Services
• Accredited by CALA for specific tests
• Licensed by the Ontario Ministry of Environment for Specific Drinking Water Analyses

Unit 11-191 Booth Road, RR#5, North Bay, Ontario P1A 4K3
Phone (705) 497 0550 / Fax (705) 497 0549

Analysis Interpretation Guide- 25 Parameter

Alkalinity

Ideal range is between 30 - 500 mg/L as CaCO3. Water that exceeds 500 mg/L as CaCO3 will form a deposit when boiled and cause an unpleasant taste. Less than 30 mg/L as CaCO3 will corrode plumbing and may cause iron to dissolve.

Aluminum (inorganic)

Aluminum in untreated water is present in the form of very fine particles of alumino-silicate clay. These clay particles are effectively removed in coagulation/filtration. Aluminum found in coagulant treated water is due to the presence of aluminum left over from use of the coagulant. Optimization of treatment should be applied to reduce this “residual” aluminum to under the operational guideline of 0.1 mg/L. High residual aluminum can cause coating of the pipes in the distribution system resulting in increased energy requirements for pumping, interferences with certain industrial processes and flocculation in the distribution system.
Medical studies have not provided clear evidence that residual aluminum has any effect on health.

Appearance

Appearance is an important aesthetic consideration for drinking water. The first notation refers to water clarity and the second notation refers to coloration and particulates.

Arsenic (inorganic)

The interim maximum acceptable concentration for arsenic in drinking water is 0.025 mg/L. Arsenic is a known carcinogen and must therefore be removed by treatment where present at levels over this concentration.
Arsenic is sometimes found at higher levels in ground water in hard rock areas (e.g. Canadian Shield) in Ontario through the natural dissolution of arsenic containing minerals, in some mine drainage waters and in some mine leachates. Arsenic is present at very low concentrations in most surface waters.

Barium (inorganic)

The maximum acceptable concentration for barium in drinking water is 1.0 mg/L. Barium is a common constituent in sedimentary rocks such as limestone and dolomite where it is accompanied by strontium and much larger amounts of calcium. As a result, hard water contains small amounts of barium but seldom at concentrations greater than 1 mg/L. Most treatment methods used for water softening are effective for barium removal.

Calcium

Calcium is used as an indication of hardness. It is found naturally and used in some road salts. Excessive amounts cause scaling and greater soap consumption.

Chloride

Chloride can be the source of an unpleasant taste and high levels may indicate contamination from roads and septic systems. Can corrode pipes. Levels 5 - 20 mg/L are ideal for drinking water.

Conductivity (measured)

Conductivity is a measure of ionic activity (ability of water to conduct a current). It is used to verify chemistry results. Natural water ranges between 50 - 1500 us/cm.

Copper

Copper is tested for health and aesthetic considerations. Can cause blue-green staining and can lead to health disorders. Typical sources are copper pipes and infiltration from agricultural and industrial areas. Maximum acceptable level is 1 mg/L.

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Fluoride

Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5 - 0.8 mg/L, the optimum level for control of tooth decay. Where supplies contain naturally occurring fluoride at levels higher than 1.5 mg/L mg/L but less than 2.4 mg/L the Ministry of Health and Long-Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources. Levels above the MAC must be reported to the local Medical Officer of Health.

Hardness

Hardness usually indicates a presence of calcium and magnesium. High levels (greater than 120 mg/L) indicate "hard" water and prevent the foaming of soaps and detergents and also cause scaling in pipes. Ideally between 80 - 100 mg/L.

Iron

Iron is the most frequent cause of staining. Usually leaves a reddish - brown precipitation. Can be a source of unpleasant taste in water. Greater than 0.3 mg/L is undesirable.

Lead

The maximum acceptable concentration for lead in drinking water is 0.01 mg/L at the point of consumption. A cumulative poison, ingestion of lead can result in serious illness or death with fetuses, infants, children (up to age six) and pregnant woman being most susceptible to adverse health effects. Lead can enter drinking water, particularly in soft or aggressive water areas, through contact with lead solder or lead service connections. In order to minimize exposure to lead introduced into drinking water from plumbing systems, it is recommended that only the cold water supply be used, after an appropriate period of flushing to rid the system of standing water, for analytical sampling, drinking, beverage preparation and cooking.

Magnesium

Magnesium is major component of hardness. High levels can cause discomfort with digestion.

Manganese

Manganese is a frequent cause of staining of laundry (black specks). It can also leave a slimy feel to dishes and cutlery. ODWS aesthetic maximum acceptable limit is 0.05 mg/L.

Nitrate

Nitrate comes into water supplies through the nitrogen cycle rather then via dissolved minerals. It is one of the major ions in natural waters. Most Nitrate that occurs in drinking water is the result of contamination of ground water supplies by septic systems, feet lots, and agricultural fertilizers. The maximum level for Nitrate is 10 mg/L.

Nitrite

Nitrite enters the water supply the same way as Nitrate but is a possible danger for children and the elderly if the levels are higher then 1mg/L

Nitrate + Nitrite

Nitrate + Nitrite levels exceeding 10 mg/L should be cause for immediate inspection of water system/sources. Indicates seepage from septic systems or contamination from animals and agricultural waste.

pH

pH below 6.5 indicates corrosion of pipes and above 8.5 indicates encrustation of pipes.

Potassium

Potassium is one of the alkali minerals, typical low in natural waters. An essential nutrient for the muscles, nerves and heart. Can be used as a substitute for sodium in softeners.

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Sodium

Sodium should be less than 20 mg/L for persons on low sodium diets. Indicates leaching from water softeners and infiltration from road salts. Can be from geological sources. Provincial criterion is less than 200 mg/L.

Sulfate

Sulfate is typically low in natural waters with the exception of sources near industries. Sulfate can also come from geological deposits. Can cause noticeable taste and smell. Can also cause health disorders at levels greater than 500 mg/L.

Zinc (inorganic)

The taste related aesthetic objective for zinc in drinking water is 5.0 mg/L. The concentration of zinc may be considerably higher at the consumer's tap in standing water because of corrosion taking place in galvanized pipes, but this can be cleared easily by brief flushing. Corrosion control using small concentrations of zinc based inhibitors has been found effective in some water systems.

Total Coliform

Total coliform count must not exceed 0 CFU / 100 mL (OMOE ODWS 2003) or water is judged unsafe. Total coliform is used to indicate the possible presence of pathogenic bacteria. If Total Coliform is detected, it is reason to disinfect the water supply. Total coliforms can be naturally found in soils. For further clarification, contact the Public Health Unit or the Ministry of Environment.

Escherichia coli

Escherichia coli must not exceed 0 CFU / 100 mL (OMOE ODWS 2003) or water is judged unsafe. Escherichia coli bacteria (commonly referred to as e. coli) is a bacteria that originates from the feces of warm blooded mammals. It is used to indicate the possible presence of septic contamination. E. coli bacteria should not be detectable in drinking water. If detected the well should be immediately disinfected and then tested several times for bacteria.

Aerobic Bacteria

Aerobic bacteria is not considered harmful for drinking. For aesthetic purposes the GBP should not exceed 200 CFU/100 mL as counted from the total coliform test. However, when present, the well should be examined for structural faults and should be decontaminated. All wells should be monitored on a quarterly to semi-annual basis for coliform contamination.

Disclaimer

The above information is provided to help you determine the acceptability of the water. This information should never be substituted for the advice provided of medical, environmental, or health officials. Near North Laboratories Inc. accepts no liability for omissions or misprints of the interpretations provided.

References

Ontario Drinking Water Standards 2003 (ODWS)
Ontario Ministry of the Environment (OMOE); Water Management
Ontario Ministry of Health (OMOH)