

pH Definition

pH (potential of hydrogen) is a measure of hydrogen ions in water.

The pH scale ranges from 0 – 14, with 7 being neutral. pH below 7 is acidic and above 7 is basic. The pH scale is logarithmic (based on a scale of 10). Therefore, water with a pH 6 is 10 times more acidic than water with a pH of 7, and water with a pH of 5 is 100 times more acidic than pH of 7.

Common products near the ends of the pH scale are battery acid (pH less than 1) and Drano (pH 11-12).

pH of Common Beverages

The pH of commercial nonalcoholic, non-dairy beverages ranges from 2.1 (lime juice concentrate) to 7.4 (spring water). Below are some specific pH readings for beverages:

Coke Zero 2.96
Diet Pepsi 3.02
Dr. Pepper 2.88
Gatorade Orange 2.97
Monster Energy 3.48
Pepsi 2.39
Powerade Orange 2.75
Propel Berry 3.01
Sprite 3.24
Welch's Apple Juice 3.57

(American Dental Association

http://www.ada.org/en/~/media/ADA/Public%20Programs/Files/JADA_The%20pH%20of%20beverages%20in%20the%20United%20States)

pH Drinking Water Standards

National Secondary Drinking Water Regulations (secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply with the standard. However, states may choose to adopt them as enforceable standards. (EPA website <https://www.epa.gov/dwregdev/drinking-water-regulations-and-contaminants#Unregulated>)

The EPA's secondary standard for pH is 6.5 – 8.5.

The State of Michigan does not have an enforceable standard for pH.

Testing for pH

Various pH testing methods are available, such as retail test kits and portable water quality meters.

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For a droplet kit, a water sample is placed in a test tube and a droplet of chemical is added. The chemical changes the water color and a chart is used to compare the color to a corresponding pH.

For a paper strip test, a strip of paper is placed in the water, causing the paper change color. This color is compared to a chart for the corresponding pH.

Although these test kits give an approximate indication of pH, portable pH water meters (such as those sold by Hach) provide more accuracy.

A probe is placed in the water and the meter provides a digital pH reading. Prior to use, the meter is calibrated to ensure accuracy. Typically, a three-point calibration is completed using solutions with pHs of 4, 7 and 10. The meter probe is placed in each solution and standardized to the respective solutions. At a minimum a two-point calibration should be completed. The probe must also be properly stored and maintained to keep accuracy.

Water Quality for Newberry Water and Light Water

As required by the Michigan Department of Environmental Quality (MDEQ), Newberry Water and Light samples their water wells annually for chloride, fluoride, hardness, iron, nitrate, nitrite, sodium and sulfate. The results from the August 2017 sampling are below:

Analyte	Result (mg/L or ppm)	State of Michigan Maximum Contaminant Level
Chloride	8	None
Fluoride	Not detected	4.0
Hardness	205	None
Iron	0.3	None
Nitrate	Not detected	10
Nitrite	Not detected	1
Sodium	Not detected	None
Sulfate	Not detected	None

mg/L – milligrams per liter

ppm – parts per million

In July 2017, Newberry Water and Light collected ten tap water samples for lead and copper analysis. This is required by the MDEQ every three years. The lead results are below:

Number	Lead Result (ppb)
1	Not detected
2	Not detected
3	2
4	2

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Number	Lead Result (ppb)
5	Not detected
6	Not detected
7	Not detected
8	4
9	Not detected
10	2

ppb- parts per billion.

The State of Michigan and USEPA Action Level for lead is 15 ppb. All the samples had lead concentrations below the Action Level.

Drinking Water Advisories

Any drinking water advisories issued in the City of Newberry must be communicated with the MDEQ and Luce- Mackinac-Alger-Schoolcraft District Health Department, as these entities enforce the drinking water regulations.

Information compiled by:

Tom Flaminio and Amy Douville
District Engineers
Michigan Department of Environmental Quality
Drinking Water and Municipal Assistance Division
Marquette, Michigan
(906) 228-3904 and (906) 228-3905