

UNDERSTANDING YOUR HOUSEHOLD WATER TEST REPORT



OSU Soil, Water and Forage Analytical Laboratory offers a low cost **Household Water Test** to help homeowners evaluate their general water quality and to help determine treatment needs and cost. This lab does not offer bacteriological, trace metals and pesticide tests, which are very important to your drinking water quality. You should consult the Oklahoma Department of Environmental Quality (DEQ) or your local Health Department if you suspect any contamination from bacteria, heavy metals, pesticides or other untested items.

How to Collect a Good Water Sample

Obtain a clean plastic bottle from your local county Extension office to collect a water sample for analysis. Prior to filling the bottle, turn on the water faucet and let it run for 3 to 5 minutes. Rinse the bottle three times with the water to be tested. Fill the bottle to the top, leaving as little air space as possible. Submit the sample to the lab for analysis through the county Extension office.

What Results do I Get From OSU Household Water Test?

The Household Water Test includes:

1. Nitrate nitrogen ($\text{NO}_3\text{-N}$)
2. pH
3. Calcium (Ca)
4. Magnesium (Mg)
5. Potassium (K)
6. Sodium (Na)
7. Chloride (Cl)
8. Sulfate (SO_4)
9. Copper (Cu)
10. Iron (Fe)
11. Manganese (Mn)
12. Zinc (Zn)
13. Electrical conductivity (EC)
14. Total dissolved solids (TDS)
15. Hardness

What do Those Test Results Mean?

The **pH** reflects the acidity or alkalinity of the water. A pH of 7 is neutral. A pH value below 7 is acid, and above 7 is alkaline. The pH between 6.5 and 8.5 is considered normal. Water below pH 6.5 is corrosive and can damage plumbing fixtures or leach metals from pipes and solder. Above pH 8.5, calcium carbonate may precipitate out and clog water lines. The water may not be suitable for your lawn, garden or houseplants if the pH is either too low or too high, and extremes may damage your soil or plants.

Total dissolved solids refer to the total amount of salt dissolved in the water (expressed in parts per million or ppm). The salts include substances that form common table salt (**sodium**

and chloride) as well as calcium, magnesium, potassium, nitrate and sulfate. The EPA standards for drinking water are listed in Table 1 for reference. Nitrate-nitrogen is a legally enforceable standard that applies to public water systems, but other analytes in **Table 1** are non-enforceable guidelines. The latter are also called secondary standards. Nitrates are of particular interest to pregnant women and infants because they may cause methemoglobinemia (blue baby syndrome). Sources of nitrate include soil, sewage, animal wastes, fertilizers and natural occurrence. Secondary contaminants may cause cosmetic effects or aesthetic effects (such as taste, odor or color) in drinking water. Sodium, Ca, Mg and K are currently not regulated in household water.

Table 1. EPA Standards for Drinking Water

Analyte	EPA Standards
Nitrate - N	10 ppm
Chloride	150 ppm
Sulfate	250 ppm
TDS	500 ppm
pH	6.5 - 8.5

Electrical Conductivity measures the ability of a water sample to conduct electricity. This relates to the amount of total dissolved solids in the water sample. Pure water has very low conductivity. As TDS increases, water becomes more conductive. Although different dissolved substances affect conductivity differently, the average $\text{TDS} = 0.66 \times \text{EC}$. The unit for EC used in our lab is micromhos/cm. Different units, such as millimhos/cm or dS/m (equal to 1,000

micromhos/cm), may be used in other labs. Neither TDS nor EC is an indicator of the safety of the water, but extremely high EC (>2,000 micromhos/cm) may indicate contamination by brine. Two other tests available from this lab are for livestock and irrigation water quality. Results are interpreted in relation to the suitability for irrigation and livestock feeding.

Hardness: The hardness of water is caused by Mg and Ca minerals. Water is considered to be “hard” when it is difficult to lather soap. The hardness can be divided into the following four classes:

Class	Hardness ppm
Soft	0-60
Moderately Hard	60-120
Hard	120-180
Very Hard	>180

Hard and very hard water is just as good for human consumption as soft water. However, soft water is preferred for washing clothes. Excessive hardness may cause laundering difficulties and produce scale or mineral deposits in hot water tanks and on cooking utensils. Hard water can be softened by installing a water softener (see MWPS-14 for details of water treatment).

Related Extension Publications

- PSS-2912 Drinking Water Testing
- L-256 Understanding Your Livestock Water Test Report
- MWPS-14 Private Water Systems Handbook. Midwest Plan Service, Ames, Iowa.

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