

# wellcare<sup>®</sup> information for you about Understanding Drinking Water Test Results

Congratulations for testing your drinking water! Regular water testing is essential to keep your drinking water clean and your well operating at peak performance.

But many well owners are stumped when they receive their test results from the laboratory. The often confusing measurements, limits and standards make it tough to determine if your water is safe or if it needs some type of treatment.

## Figuring Out the Measurements\*

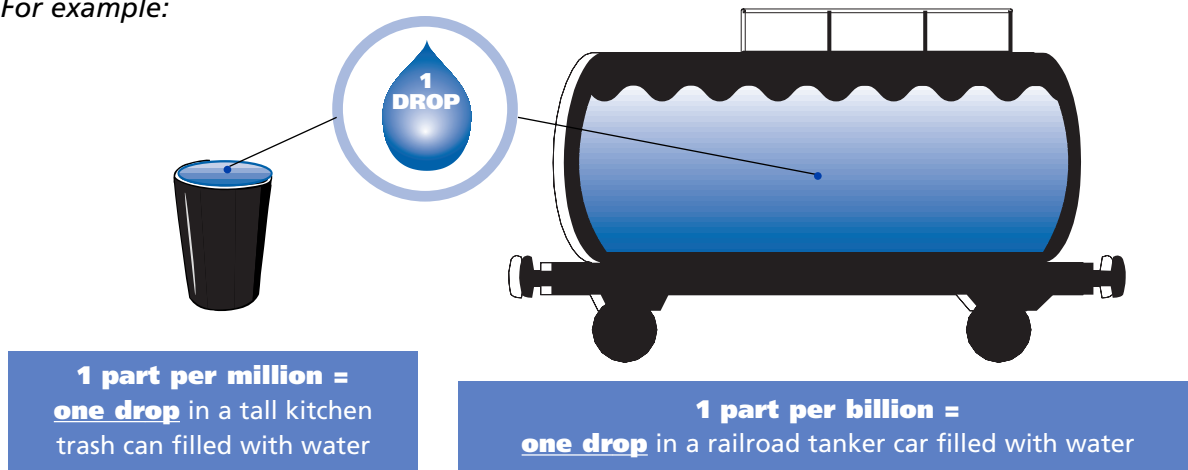
Most substances in water are measured as a concentration: a specific mass of a specific chemical within a specific unit or volume of water. The confusing part is that three different terms can be used to reflect the exact same measurement.

part per million/ppm = milligram per liter of water = mg/L

part per billion/ppb = microgram per liter of water = ug/L

So what do these terms really mean? Basically, they refer to very small amounts of a substance within about a quart of water. (A liter amounts to 1.05 quarts.)

*For example:*



These are very dilute concentrations. For example, the government recommendation for sodium in drinking water is no more than 20 parts per million. By comparison, the salt content of seawater is 32,000 parts per million.

\* Our thanks to ...

Water on the Web, <http://waterontheweb.org>, based at the University of Minnesota-Duluth and funded by the National Science Foundation.

## Figuring Out the Standards

The U.S. Environmental Protection Agency (EPA) regulates public water supplies but not private wells. Well owners can use EPA's three sets of standards to judge their drinking water quality. Sometimes state standards are stricter than the EPA's, so check with your local health department for specific substances of concern.

Maximum Containment Levels (MCLs) are the highest level of a contaminant that the EPA allows in drinking water. MCLs are legally enforceable for public water supplies. When they turn up in the water, a utility must treat and remove or reduce the contaminant below the maximum level to protect public health.

EPA also sets standards for a second group of contaminants. These limits serve as guidelines for good water quality, but are not required by law. These National Secondary Drinking Water Regulations (NSDWRs), known as the secondary standards, regulate contaminants that may cause cosmetic effects, such as skin or tooth discoloration, or aesthetic effects, such as taste, odor or color, in drinking water. These contaminants are not considered threats to public health.

Finally, EPA is studying another group of contaminants for possible regulation in the future. The Drinking Water Contaminant Candidate List (CCL) is published every five years. These standards are under discussion, but are not yet an official EPA recommendation or regulation.

Here's the confusing part. On most government charts, the standard for a given substance will be written in parts per million. But the great majority of limits actually relate to much smaller amounts, in parts per billion. If your laboratory chooses one over the other, you may not be able to figure out if your water needs treatment or not.

For example, arsenic is a naturally occurring mineral found in soil and bedrock. We know arsenic as a popular poison in murder mysteries. But the substance also can work its way into ground water through erosion and build to dangerous levels in some wells. On most charts, the MCL for arsenic is written .010 mg/L. What they really mean is 10 parts per billion.

## Translating Your Test Results

The chart to the right is a road map to your test results. It lists each contaminant, how it is regulated or not, and the maximum levels in all the measurements you are likely to see. Cross reference your lab results to determine if your water needs treatment.

## Next Steps

Laboratories have detection limits, or levels below which contaminants cannot be reliably detected. That does not necessarily mean that the chemical is not present. There could be so little present that it cannot be reliably detected with the laboratory equipment or testing procedures being used.

The important question is whether the contaminant poses a health threat at that particular concentration. Compare your water test results to the federal standards in the table, to

assess the potential for health problems. If in doubt, contact your state health department or environmental agency, the local extension service or your water well contractor.

After you get your first test results, you would be wise to follow up with a second test before you decide on any water treatment. This is because there is a certain margin of error in water testing and contamination problems may vary. Use bottled water until the second results are in.

***There is a major exception to this rule.*** Any positive test for bacteria, such as fecal coliforms and *E. coli*, or microorganisms, such as *cryptosporidium* or *Giardia lamblia*, demands immediate disinfection of your well and water supply. These organisms can make you very sick. Call your local health department or water well contractor for help.

Contaminant	MCL	Secondary	Candidate	PPM or mg/L	PPB or ug/L
Arsenic	X			0.01	10
Atrazine	X			0.003	3
Bacteria	X			Zero	Zero
Barium	X			2	2000
Benzene	X			0.005	5
Cadmium	X			0.005	5
Chromium	X			0.1	100
Chlorine	X			4	4000
Copper	X			1.3	1300
<i>Cryptosporidium</i>	X			Zero	Zero
Fluoride	X			4	4000
<i>Giardia lamblia</i>	X			Zero	Zero
Iron		X		0.3	300
Lead	X			0.015	15
Manganese		X		0.05	50
Mercury	X			0.002	2
MTBE			X	0.020	20
Nitrate	X			10	10000
Nitrite	X			1	1000
Perchlorate			X	0.004	4
Sodium			X	20	20000
Sulfate		X		250	250000
TCE	X			0.005	5
THMs	X			0.08	80
Toluene	X			1	1000
Total Dissolved Solids		X		500	500000
Uranium	X			0.03	30

## For more information on your drinking water

The following sites provide up-to-date information on efforts to protect drinking water supplies and steps you can take as a private well owner:

Water Quality Association      [www.wqa.org](http://www.wqa.org)

NSF International                [www.nsf.org](http://www.nsf.org)

Underwriters Laboratories Inc. Drink Well™ Well Water Testing      [www.uldrinkwell.com](http://www.uldrinkwell.com)

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## For more information about wells and other wellcare® publications

wellcare® is a program of the **Water Systems Council (WSC)**. WSC is a national nonprofit organization dedicated to promoting the wider use of wells as modern and affordable safe drinking water systems and to protecting ground water resources nationwide. Well owners and others with questions about wells or well water can now call the **wellcare® hotline at 888-395-1033** or visit **[www.watersystemscouncil.org](http://www.watersystemscouncil.org)**



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