A Guide to Interpreting your WATER QUALITY ANALYSIS REPORT

As part of our commitment to customer service, we have prepared this guide to help you examine and understand the results of a water quality analysis of your well water. Below is a table of drinking water standards. The purpose of these standards is to assure the safety of public water supplies and to comply with the Federal "Safe Drinking Water Act" and the U.S. Environmental Protection Agency's "Primary Drinking Water Regulations." The Texas Commission on Environmental Quality (TCEQ) is the state agency authorized to administer these standards to public water suppliers. Although household wells are exempt, knowledge of these standards is still important for all well owners.

Primary standards apply to constituents that have set maximum contaminant levels (MCLs) to protect against microbiological (disease-causing pathogens), chemical, and radiological pollutants. ***Secondary*** standards are recommended MCLs which are generally associated with taste, odor, appearance, and staining problems.

PRIMARY STANDARDS				
Constituent	**Level**	**Potential Health Effects**	**Common Sources of Contamination**	**Method of Removal**
Antimony	**6 µg/l**	It is not considered to be carcinogenic, but high levels can be toxic to the gastrointestinal tract, heart, respiratory tract, skin, and liver.	Discharge from petroleum refineries; fire retardants; ceramic; electronics; solder	Distillation, ion exchange, reverse osmosis
Arsenic	**10 µg/l**	Skin damage or problems with circulatory systems; may increase risk of getting cancer	Erosion of natural deposits; runoff from orchards, runoff from glass and electronics production wastes	Arsenic can be present in several ionic forms which vary in toxicity and method of removal. Removal As+3 and As+7: distillation and reverse osmosis Removal As+5: activated alumina, activated carbon, adsorption, distillation, ion exchange, reverse osmosis
Barium	**2 mg/l**	Increase in blood pressure	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits	Distillation, ion exchange, reverse osmosis
Beryllium	**4** µg/l	Intestinal lesions	Concentrations in groundwater are usually low due to element's scarcity, low solubility, and adsorption by clays. Contamination can come from discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace and defense industries	Distillation, ion exchange, reverse osmosis

PRIMARY STANDARDS				
Constituent	**Level**	**Potential Health Effects**	**Common Sources of Contamination**	**Method of Removal**
Cadmium	**5 µg/l**	Kidney damage, renal dysfunction, hypertension, anemia	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints	Distillation, ion exchange, reverse osmosis
Chromium	**100 µg/l**	Allergic dermatitis	Discharge from steel and pulp mills; erosion of natural deposit	Activated carbon, distillation, ion exchange, reverse osmosis
Coliform (E. coli)/Bacteria				
Fluoride	**4 mg/l**	Bone disease (pain and tenderness of the bones); children may get mottled teeth from fertilizer and aluminum factories	Water additive that promotes strong teeth; erosion of natural deposits; discharge	Distillation, ion exchange, reverse osmosis
Gross Alpha	**15 pCi/l**	Alpha particle radiation cannot penetrate a piece of paper or human skin but is very dangerous when the radioactive substance is ingested or inhaled. The amount of potential damage to organ tissues depends upon how long the tissues were exposed and the dosage of radiation.	Gross Alpha radiation is the emission of positively charged particles from the disintegration (radioactive decay) of certain elements such as uranium, thorium, and radium, among others. Alpha radiation in drinking water can be in the form of dissolved minerals, or in the case of radon, as a gas.	Distillation, ion exchange, reverse osmosis
Mercury	**2 µg/l**	Kidney damage and central nervous system problems	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and croplands	Distillation and reverse osmosis
Nitrate (as N)	**10 mg/l**	Infants under 6 months old who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits	Distillation, ion exchange, reverse osmosis
Nitrite (as N)	**1 mg/l**	Infants under 6 months old who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits	Distillation, ion exchange, reverse osmosis
Radium $^{226/228}$	**5 pCi/l**	Increased risk of cancer	Erosion of natural deposits	Ion exchange and reverse osmosis

PRIMARY STANDARDS				
Constituent	**Level**	**Potential Health Effects**	**Common Sources of Contamination**	**Method of Removal**
Selenium	**50 µg/l**	Hair or fingernail loss; numbness in fingers or toes; circulatory problems	Discharge from rubber and plastic factories; leaching from landfills	Activated alumina, distillation, ion exchange, reverse osmosis
Thallium	**2 µg/l**	Hair loss; changes in blood; kidney, intestine or liver problems	Leaching from ore-processing sites; discharge from electronics, glass and drug factories	Distillation, ion exchange, reverse osmosis
Uranium (Natural)	**30 µg/l**	Increased risk of cancer, kidney toxicity	Erosion of natural deposits	Anion exchange, cation exchange, distillation, electrodialysis, reverse osmosis

'µg is the symbol for microgram, where 1,000 µg/l = 1 milligram/liter (mg/l); pCi/1 is picocurie per liter

SECONDARY STANDARDS				
Constituent	**Level**	**Potential Health Effects**	**Common Sources of Contamination**	**Method of Removal**
Aluminum (range)	**50 - 200 µg/l**	Excessive concentrations may cause gastrointestinal irritation. May pose water discoloration problems.	Erosion of natural deposits	Distillation, ion exchange, reverse osmosis
Chloride	**300 mg/l**	Gives drinking water a salty taste and may increase the corrosiveness of the water.	Erosion of natural deposits; present in sewage, oil-field brines, industrial effluent, and seawater.	Distillation, ion exchange, reverse osmosis
Copper	**1 mg/l**	None	May be dissolved from copper pipes and plumbing fixtures, especially if the pH of the water is below 7.	Distillation, ion exchange, reverse osmosis
Fluoride	**2 mg/l**	Bone disease (pain and tenderness of the bones); children may get mottled teeth from fertilizer and aluminum factories	Water additive that promotes strong teeth; erosion of natural deposits; discharge	Distillation, ion exchange, reverse osmosis
Iron	**300 µg/l**	High levels can stain laundry and utensils cause an unpleasant taste, and favor the growth of iron bacteria.	Present in certain geologic formations. High levels of iron can also be traced to well casings, pipes, pumps, storage tanks, and other cast iron equipment.	Chlorination-precipitation, distillation, filtration, ion exchange, reverse osmosis
Manganese	**50 µg/l**	High levels can stain laundry and plumping and cause taste problems.	Concentrations in groundwater are usually low with elevated levels occurring in brines and thernal springs.	Chlorination-precipitation , distillation, ion exchange, reverse osmosis

SECONDARY STANDARDS				
Constituent	**Level**	**Potential Health Effects**	**Common Sources of Contamination**	**Method of Removal**
pH	**6.5-8.5**	Both low and high pH levels are corrosive and may degrade metals. A pH of 7 or greater can cause scaling problems in pipes.	Acids and free carbon dioxide lower the pH. Carbonates, bicarbonates, hydroxides, phosphates, silicates, and borates raise the pH.	
Silver	**100 µg/l**		Used in the production of photographic film and other industries.	Distillation, ion exchange, reverse osmosis
Sulfate	**300 mg/l**	High levels can give water a bitter taste, rotten- egg smell, and cause diarrhea. In combination with calcium, sulfate forms scale in pipes and boilers.	Erosion of natural deposits; present in some mining and industrial wastes.	Ion exchange
Total Dissolved Solids and Conductivity	**1,000 mg/l**	TDS: 1,000 mg/I or less fresh water; TDS: 1,001 - 3,000 mg/1 slightly saline; TDS: 3,001 -10,000 mg/1 moderately saline; TDS: 10,001 - 35,000 mg/I very saline; TDS: 35,000 mg/I or greater are brines	Approximate total amount of mineral constituents (primarily Ca, Cl, K, Mg, Na, NO3, bicarbonate, and carbonate ions) dissolved from rocks and soils in water. Conductivity is an indicator of the salinity or mineral content of water and can be used to estimate total dissolved solids.	
Zinc	**5 mg/l**	Excessive concentrations may result in irritability, muscle stiffness and pain, loss of appetite, and nausea.	Erosion of natural deposits; used in the manufacture of steel and in the production of paints, rubber, cosmetics, and plastics.	Distillation, ion exchange, reverse osmosis

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References

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