Some Facts About Water Contaminates

Did You Know?

Nitrites and Nitrates are nitrogen forms that can seriously contaminate water. They frequently get into drinking water from numerous manmade activities such as farming, industrial waste, sewage, biological waste, and feedlot runoff. Nitrates/Nitrites are not desirable at any level in potable water, however the EPA Primary Standards are 1 ppm (parts per million) for Nitrite and 10 ppm (part per million) for Nitrate.

Hardness in water is generally determined by the presence of calcium and magnesium. Hardness is normally measured in ppm or gpg (grains per gallon). One (1) grain per gallon is equal to 17.1 ppm of hardness. Currently there are no EPA Standards for hardness, however, most water professionals agree that 50 ppm or less is a desirable range. The effect of hardness can cause the overuse of soap and other detergents since they do not bubble up as well in hard water.

Acidity (pH) and alkalinity levels in water are measured in pH (positive hydrogen) and total alkalinity in ppm. The pH scale of 0-14 indicates whether water is acidic, neutral or alkaline. A pH of 7 means the water is neutral and ideal. Current EPA Secondary Standards suggest a pH range of 6.5 to 8.5. High alkaline levels (above 180 ppm) may cause skin irritations as well as objectionable taste. pH levels will generally be acidic if the alkalinity levels are below 80 ppm.

Around the time the first automobile was manufactured, **chlorine** was first added to the public water system. Since that time, our public water supply has been virtually free of diseases such as typhoid and cholera. The EPA recommends a level of chlorine less than 4.0 to be present in tap water.

Iron generally occurs naturally in water and does not present a problem unless it exceeds EPA Secondary Standard of more than 0.3 ppm. As iron levels increase, stains will occur on fixtures and on clothes. Iron frequently leaves a reddish brown stain. It may be present in one of the following forms: Soluble ferrous iron, Ferric ions (soluble in acidic water), Ferric hydroxide (insoluble in neutral or alkaline water), Ferric oxide (appearing as rust in pipes and on fixtures), Iron Bacteria.

Copper occurs naturally in small amounts in water, and is generally not a problem. However, if copper level are above EPA Primary Standard of 1.3 ppm, problems can begin developing. Copper can affect red blood cells, causing blood related ailments and at levels above 3 ppm can result in severe gastrointestinal reactions.

PurTest® Standard School Kit

A Water Learning Program

Teacher's Guide

Water

The fundamental element most of us take for granted…

Standard Kit

*30 Instruction/color chart & 1 Water Knowledge booklet.
*30 Individually foiled strips with 4 test on each strip, **Chlorine/Copper/Nitrate/Nitrite (labeled 4 WAY)**
*30 Individually foiled strips with 3 test on each strip, **Alkalinity/pH/Hardness (labeled 3 WAY)**
*30 Individually foiled strips with 1 test on each strip, **Iron (labeled Iron)**
*30 Vials for the Iron Test
*30 Iron reagent tablets, foiled, containing sulfite for the iron test.

American Water Service
Indian Trail, NC 28079
www.purtest.com

BEFORE YOU BEGIN

Please take a moment to read the instructions carefully (see enclosed instruction and color results chart). This kit is intended to introduce students to the necessity of testing water because it is a substance that is vital to all life on this planet. The quality and availability of water will affect life.

Even though test strips are considered non-hazardous care should be used in the handling and disposing of the test strips. Adult supervision is recommended for children under the age of 12.

SAFETY AND USE

Do not drink the tested water sample.
Do not ingest any of the kit material.
Do not touch the pads on the strips. Keep the strips dry prior to use.
Upon opening the foil pouches use immediately if outdoors and within 30 minutes indoors.
Wash your hands after completing tests.
Use in a well lit area, but not in direct sunlight.
Store the kit at room temperature.
Completely rinse and dry test vials before storing.
Note: The small sulfite pellet required for the Iron Test may, in rare instances, cause an allergic reaction in the form of a mild temporary rash. With proper handling, this occurrence will be minimized.
MSDS available, call 1-800-788-4825.

ABOUT THE TESTS IN THIS KIT

No technical background necessary.
All tests are laboratory certified.
All tests are based on EPA guidelines.
All the tests are safe, reliable, and accurate.

Record Your Test Results					PPM (parts per million) EPA Standard (acceptable level of contaminants in drinking water)	
Contaminant	Test 1	Test 2	Test 3	Test 4	Test 5	EPA Standard
Nitrates						≥10 ppm
Nitrites						≥1 ppm
Alkalinity						≥180 ppm
pH						< 7 > 9
Hardness						≥50 ppm
Iron						≥ .3 ppm
Copper						≥ 1.3 ppm
Chlorine						< 4 ppm

Some Facts About Water

Water is one of the most abundant resources on earth. Water is a compound, or molecule consisting of 2 separate elements, oxygen and hydrogen. In each molecule of water there are 2 hydrogen atoms and 1 oxygen atom that bond together to form H_2O or water.

Over 70 % of the surface of the earth is water. Of all the earth's water, 97 % is in the oceans and seas leaving 2% as fresh water in glaciers, and the remaining 1% in lakes, ground water, rivers, and the atmosphere for human and animal consumption. The five great lakes represent about 95% of all fresh water above ground in the United States.

Drinking Water

From the nation's smallest community to its biggest city, Americans use our rivers, lakes and aquifers for drinking water. About half of the population drinks from rivers and lakes, and the other half tap into underground water resources.

Commerce / Agriculture

The nation's $45 billion commercial fishing industry relies on clean water to deliver products safe to eat. Manufacturers use about 13 trillion gallons of water every year – more than nine times the volume that flows through the Mississippi River. Farmers irrigate about 15 % of American farm lands to grow the food and fiber that sustain us.

Tourism and Quality of Life

Beaches, rivers and lakes are the number one vacation choice for Americans. A Money magazine survey found clean water and air rank among the top factors American consider in choosing a place to live.

Human Element

Human blood is approximately 95% water. Next to air, water is the most important element needed to sustain life. A human can survive approximately 7 days without water, whereas survival without food is approximately 30 days.