

How to Tell if Your Water Supply Is Safe to Drink

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Thinking a “natural” source of water is automatically a safe source can be a serious mistake. Natural water sources may be contaminated by disease-producing organisms, chemicals, or unsafe levels of certain minerals and dissolved gases.

How do you know if a water supply is safe? The only sure method is thorough laboratory testing. Thorough testing means a chemical as well as a bacterial analysis. If you are buying property where an existing water supply is a key selling feature, you might want to make the sale contingent on the satisfactory outcome of such a test.

Eyeball Tests

There are some crude ways to “eyeball” a water supply and make an “educated guess” even before testing. These are not foolproof.

First, check the water over a period of time. Is the quality consistent? You should strongly suspect a water supply when smell, taste, color, or clarity changes. But do not try reversing the logic. A water supply can be consistently bad.

Second, consider the type of source. Today, a safe supply of “surface water” (a water hole, pond, creek, river) is rare and drinking from the average brook is not advisable. As surface water washes over the ground, it picks up pesticide and other chemical residues, dead animals, and disease-causing organisms from human and animal excrement.

“Ground water” sources (wells or springs) are a safer bet. As “underground rivers” pass through gravel and sand, much of this debris is filtered out. Generally, the deeper the water source, the better odds of having a safe water supply because the water has been around longer and more thoroughly filtered. Water pumped from a properly covered “deep ground water



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well” is rarely contaminated; when it is, surface water is usually getting into the well.

A Good Well

And that brings up a third indicator. Whether the water comes from a spring, a shallow well, or a deep ground water well, find out whether the well was constructed properly. Well construction is tricky business. A properly constructed well is disinfected after construction is finished, after the water pump is installed, and following introduction of a potential source of contamination into the well environment.

Also, an improperly cased, grouted, or sealed well can allow surface water to seep into the well water from a polluted river or stream, or from rain runoff which meandered under the out-house or septic tank before finding its way into the well. The latter is especially likely if the well was built on lower ground than the human waste site. State and federal water studies conservatively estimate that 35-40 percent of all wells and cisterns in the

United States are contaminated for one of these reasons.

Some Other Quick “Eyeball” Tests:

Does it foam?

It is always a poor sign when a glass of water reminds you of a glass of beer. Detergents are getting into the water. If the water comes from a lake or stream, the detergent may be coming from a sewage processing plant. If the water comes from a well, the detergent may be coming from your cesspool or septic tank or a neighbor’s. In either case, the detergent may be the least of your worries.

Is it cloudy?

Water is clear. Cloudy water contains suspended particles—clay and silt, living or decaying organic material, natural or synthetic chemical compounds. Without laboratory analysis, the nature of the particles is anybody’s guess. (When black particles appear in piped or pumped water, it often indicates iron, steel, or copper corrosion—a sign of a defective filtration sys-

tem, bad pump, bad pipes, and/or highly corrosive water.)

Is it colorful?

Pure water is colorless. In well water, a slight green color may indicate algae has gotten out of hand. High levels of iron, manganese, or iron bacteria can impart color ranging from a rose quartz to a definite rust. When water is coming from a surface source, a dark brown or gray tinge may indicate decaying vegetation.

Does it have a bouquet?

Clean water is odorless. Water that smells like a dirty dog or a dead fish probably contains one of them. When it smells like a rotten egg, it may have high levels of hydrogen sulfide gas, sulfate reducing or sulfur bacteria (which produce hydrogen sulfide as a product of sulfate metabolism). There is no telling what this water contains because hydrogen sulfide is corrosive enough to dissolve pipes, filters, water tanks, even the concrete walls of the well. A strong chlorine smell is not necessarily a good sign either. Rather than indicating safe water, it may indicate excessive buildup of chloroform, combined- chlorine residual, or dangerous waste products like chlorinated phenolics. Any doubtful bouquet is good cause for passing up a water source until it is thoroughly tested.

Is it flavorful?

Water is tasteless. Any "flavor" to water is due to what is in it. If it has a slight thirst-quenching metallic taste, but no odor, the water is probably high in minerals. So far as anyone knows, that is good. If it has a strong metallic taste and a peculiar metallic odor, the water may be leeching highly poisonous heavy metals from the ground or plumbing. An extremely high or low pH result on a litmus

paper (available at pharmacies), along with a strong metallic taste and a funny odor is further evidence for passing up this source of water.

In summary, the safest water is from deep ground water wells that were constructed by a qualified well contractor. Nowadays, surface water is always suspect. Clean water is clear, colorless, odorless, and almost tasteless (though it may have a slight metallic taste), and it definitely does not foam.

Chlorine and Boiling

In an emergency situation, the best bet is to filter water and chlorinate it. Chlorine is a **sterilizer**. It kills organisms. Test kits are available to help you determine when you have achieved the right concentration of chlorine. The second best method is to filter the water, then boil it for 15-20 minutes. Boiling **disinfects—it does not sterilize**. This is an important difference. Disinfecting reduces the number of living organisms, sterilization eliminates them. Except for very sophisticated systems, filtering will not remove pesticides and other chemical contaminants.

If you plan to use an unknown water source for an extended period of time, have it tested. Most state and many local public health departments will supply a test kit for collecting water samples and will test the water for free or for a small charge. Commercial organizations charge more, but will perform more elaborate tests than the public agencies.

(Rodney Merrill is a faculty mentor in Health & Psychology for Columbia Pacific University and writes on health-related topics.)

This bird (the crow) sees the white man come and the Indian withdraw, but it withdraws not. Its untamed voice is still heard above the tinkling of the forge...It remains to remind us of aboriginal nature.

Henry David Thoreau
(1817-1862)



*The stars are out.
Venus, Mars, and Jupiter
Are converging in the western sky.
Night after night
I stand in the street
And watch.
Two thousand years ago
Kings would have consulted
with wisemen,
Chanting priests,
Clutching their knives,
Would have led
Witless sheep
To the altar
To pore over their entrails
And armies would have taken
to the field
Or fled.
The breeze is cool on my back.
My neighbors are
In their houses
Watching Cheers.*

By John Earl Silveira
Ojai, CA

*You pass through my mind
A black chrysanthemum is hurled at the sun
Dripping with dew
The sun drowns*

...Hugh Gavin Duffy