

Waking Up the Nation,  
One Reader at a Time...

# PUBLIC HEALTH ALERT

## Quality, Healthful Water Matters - Now Let's Find It or Will Someone Please Point the Way to Healthful Water?



by Robert Slovak

During my 37 year career I've written hundreds of articles and presentations on water technology, water quality and consumer advice for seeking the healthiest water for drinking and bathing. That was after decades of study and hands-on research.

I recognize that you are a very special readership - the health-seeking elite. You want science-based solutions to your water needs at an affordable price. You can grasp technical information better than average and are less prone to fall for hype and deception - which like a minefield set up by promoters of water products.

Today with the Internet you can "google"

literally hundreds-of-thousands to millions of pages of information on any water topic imaginable. This realization prompted me to take a different approach for this assignment because well-intentioned consumers are simply overwhelmed with the quantity of information about an already confusing and intricate subject. This is especially true for otherwise informative and reputable health websites that are no more qualified to sort through the maze of information than the general public. In fact, I disagree with most of the product recommendations of the most respected health and wellness websites.

I thought about taking an approach that was concentrated and straight-talking. No wading through the background of how much fresh water there is on the planet or the environmental causes of water pollution. I'll be Joe Friday... "Just the facts ma'am, nothing but the facts." The Cliff Notes version if you will. So let's dive in and get you deserving readers educated. But first, let me establish some

ground rules...

### Why water is so important to us

We are 60-70% water (actually a slightly salty solution of mineral elements). That suggests there's nothing more important than water, physiologically speaking. It hosts every biological reaction in the human body. The water we put into our bodies (from beverages and food) continually replaces the molecules that are there. If this water transports impurities and toxins or it is lacking beneficial constituents, it can result in deteriorating health.

### The scope of our article

Choosing the best options to provide healthful drinking water and safe bathing water from public water supplies (the complexities and variation of private well supplies is beyond the scope of this article). Our focus will be on Point of Use (POU) drinking water systems that treat a single location in the home and Point of Entry (POE) systems that treat all

the home water for safe bathing and showing. This is the most effective approach by far.

### The limitations of our article

We live in a new scientific era that recognizes water as a multi-dimensional substance. I've identified these dimensions as "Physical/Chemical", "Structural (molecular)" and "Energetic (vibration and quantum)". This article will only be concerned with the "Physical/Chemical" aspect of water or I'd have to keep your attention for days.

### Our mutual expectations about drinking water

We want pure water free of contaminants (we'll tell you what ones later).

We want to benefit from the critical hydrating and cleansing properties of water.

We want to be able to enhance water to deliver nutrients and beneficial health "effects".

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## Our mutual expectations about bathing water

We want to be assured that our families are not exposed to topical and inhaled contaminants that are present in most public water supplies.

## Water treatment technologies and systems that will be discussed

- ❖ Distillation with activated carbon
- ❖ Reverse Osmosis with activated carbon
- ❖ Activated carbon block filters
- ❖ Alkaline Ionizers
- ❖ Alkaline filters

## Water modifications and enhancements that will be discussed

- ❖ Alkaline water
- ❖ pH (alkaline) additives
- ❖ "Alkalinity" additives
- ❖ Electrically (ERW) reduced antioxidant water (negative ORP)
- ❖ Chemically (CRW) reduced antioxidant water (negative ORP)

## Procuring Safe Healthful Water - The Facts and the Fiction

### Why do we need to treat my tap-water ?

Public water supplies in America do an excellent job of protecting us from waterborne disease and the lion's share of the most serious contaminants. There are exceptions because people and machines make mistakes and the funds to operate treatment plants are growing more limited every day.

This wellness-minded readership expects and deserves more. Here's why...

1. There are low levels of various regulated contaminants in public water supplies. (See [www.epa.gov/safewater](http://www.epa.gov/safewater) for the potential list of contaminants). Some of these are from natural sources (like arsenic) and others come from industrial, agricultural and you-name-it activities.

2. There are unpredictable levels of unregulated contaminants in public water supplies. (Pharmaceutical drugs and medicines referred to as Endocrine Disrupting Chemicals, EDC's; Personal Care Products (PCPP's) such as lotions, cosmetics, perfumes; specific radionuclides from nuclear leakage and accidents that are infiltrating surface and ground water.

3. There are chemicals intentionally used in water treatment that many experts consider health compromising (chlorine, chloramines, chlorine dioxide, aluminum sulfate and fluoride). Be aware too that some of the highest risk contaminants form in water as the result of the chemical reaction between water treatment additives such as chlorine.

## The most important single principle to remember when seeking home water treatment options.

*RULE #1 - The primary responsibility of any home POU drinking water system is to reduce the*

*highest amount and the most categories of contaminants.* So many well-intentioned consumers forget this and opt for the distraction gadgetry, features and water "effects" not based on sound science much less health improvement. Bear in mind that there are no magic technologies that selectively remove the bad contaminants and leave in the beneficial constituents. For those seeking contaminant-free water you must start by separating virtually all the contents, leaving pure water.

## These POU technologies stand alone - the foundation of pure, healthful water

Distillation and Reverse Osmosis (RO), combined with high-grade activated carbon are unmatched in their ability to fulfill the most important principal of seeking pure healthful water - removing contaminants. Their ability to provide a high reduction of virtually every category of contaminant is spectacular. It is no surprise that these are the only technologies capable of the most difficult challenge in water treatment - desalinating seawater. They are also the primary technologies used in the critical industrial, pharmaceutical and medical applications.

Distillation uses considerable energy and requires cooling of the water - a small price to pay for its exceptional performance. Typically, water distillers also require periodic customer attention in cleaning deposits left behind

during the distilling process.

Reverse Osmosis has an edge in convenience and versatility but is best used on public water supplies and well water of known microbiological quality. RO systems also require regular annual service by a qualified technician who should change certain filters and sanitize the entire system including the storage tank (very important!). Because modern RO systems are capable of producing so much water (up to 50 gallons per day), owners are advised to keep the water fresh by completely draining the tank three times per week.

## Is there anything wrong with drinking pure distilled and RO water?

Nothing - except that we recommend minerals be added to your family's daily drinking water to take advantage of the water as a nutrient delivery system and to structure the pure water for enhanced bioavailability. I will explain how to do this later in the article. There is no need to add anything to the water used for preparing health drinks and food because they will impart their own mineral content and structuring. If you are fasting or cleansing you can benefit from using the pure water directly without mineral additives.

Some uninformed promoters of competing technologies claim that distilled and RO water are too acidic for the body. This is a misconception and a disservice to these superb

technologies. In reality, the weak acidity of pure water has no negative biological effect whatsoever. Pure water, with most of its contents removed, can have a slightly acid pH because a small amount of carbon dioxide from the adjacent air temporarily dissolves in it. But as soon as the water is consumed it will take on the pH of your saliva and other body fluids. Pure water simply "assumes" the pH of whatever it is in contact with.

Unfortunately, the pH of water is one of the most misunderstood concepts among health-minded consumers and I hope to further clarify this issue for our readers as I move along.

## What about activated carbon block filters?

So-called carbon block filters are available in every shape and size. They are one of the most popular technologies for POU drinking water filters - and for good reason. While not as effective as distillation and RO, they offer remarkable performance in reducing limited categories of contaminants. For example, they are most effective for chlorine-based chemicals and their toxic byproducts like Trihalomethanes, volatile organic chemicals (VOC's) from industrial and agricultural activities and offensive tastes and odors. They are typically not effective for heavy metals (some can reduce lead), fluoride, radionuclides and dissolved inorganic substances. A carbon block may be perfectly adequate if you have

researched the chemical quality of your public water supply and determined that it is suitably free of the aforementioned contaminants not removed by carbon block technology.

## What about alkaline water - it seems to be the newest buzz-word of healthy drinking water

Some of you will be understandably shaken by what I have to report on alkaline water - one the most successfully marketed water concepts in recent times. First, what is it? Alkaline water means its pH is >7 and advocates prefer a pH of 8.5 to 10.5. Why consume it? The reasoning is that almost everything we do in life - breathing, eating, exercising, etc. - generates metabolic acids that the body continually strives to neutralize in order to maintain pH balance in our blood and tissues. Nobel Laureate Albert Szent-Gyorgyi (the discoverer of vitamin C) once stated it this way: *"The body is alkaline by design, but acidic by function."*

## So far, so good?

Unfortunately, alkaline pH water is **not** a reliable solution to achieving pH balance in the body (I realize it sounds logical but read on...). In fact, this highly promoted concept is based on a simple *misconception* - that alkaline pH is a factor in neutralizing acid. It isn't, no matter how logical it seems and no matter how many promoters tell

you so! Instead, it is something called "alkalinity" that is the critical factor. Now readers may want to do a double-take just about now because "alkaline" and "alkalinity" *sound* an awful lot alike - but they are worlds apart in their significance - it's just "Chemistry 101". This may come as a surprise, even to those promoting alkaline water products, that the pH of water alone says little about its ability to neutralize acids or be physiologically meaningful to our body. Armies of promoters teach the importance of alkaline pH with religious conviction but science doesn't support their claim. They aren't lying, no one just ever told them the truth. You see, it's easy to make alkaline water but very difficult to add acid-neutralizing "alkalinity". For the reader's information, alkaline pH is measured with a pH meter (or pH litmus paper) but "alkalinity" must be measured with a special laboratory test kit. If and when you are looking to truly alkalize your body, remember this... *"It is not alkaline water you need, it's water with alkalinity."*

To further add to your understanding of this issue, most of you are already familiar with the most recognized method to alkalize the body naturally - drinking fresh green vegetable juices. It may surprise some of you but virtually all vegetable juices have an acid pH of 5.5 to 7. Even at this acid pH the juices deliver a high level of "alkalinity" as well as "alkaline ash" when they are metabolized. This vividly demon-

strates how irrelevant alkaline pH is when it comes to alkalizing (pH balancing) the body!

## Alkaline ionizers, alkaline filters and alkaline pH additives - hype or science?

First, alkaline ionizers are a perfect example of violating *RULE #1: The primary responsibility of any home POU drinking water system is to reduce the highest amount and the most categories of contaminants*. This product category typically offers inadequate technology for the removal of a wide variety of waterborne contaminants. A small carbon filter with some obscure mixture of media is generally all that is supplied. Well-meaning consumers are so distracted by fancy electronics and the expectation of alkaline pH drinking water that they simply forget the most important objective - remove contaminants. Many owners of such systems who do their homework end up installing additional POU water systems including carbon block filters as well as RO systems ahead of their alkaline ionizer system (and the cost becomes prohibitively high). Readers also should understand that the mineral composition of alkaline water completely depends on what's in the public water supply these systems are connected to. So if you're in Upstate NY your alkaline water will be completely different than if you're in Southern Cal. That's no way to optimize one's health and wellness

program!

Alkaline filters (the new gizmo on the market) which are typically added on to an RO system to capitalize on the alkaline water trend, lead consumers into the same trap by providing high pH alkaline water but without a predictable amount of acid neutralizing "alkalinity". The same is true of so-called alkaline pH additives (e.g., pH balance drops you add to a glass of water.) These methods are like the icing without the cake.

Take a look at the chart on this page as it examines test results from some of the popular methods for alkalizing the body - it is quite revealing. You can easily see that there is no correlation between the pH and the level of acid-neutralizing "alkalinity" present. Since this topic is an extremely complex one and I recommend that every reader do their due-diligence before falling for any sales pitches and parlor trick demonstrations.

## **Electrically (ERW) and chemically (CRW) reduced antioxidant water**

Before readers think I have nothing good to say about alkaline ionizers, there is one thing they do very well - produce electrically reduced water (ERW) that is extremely rich in electrons and functions like an antioxidant in the body. This characteristic of water is measured by a parameter called the Oxidation Reduction Potential (ORP) in millivolts (mV). When the ORP

is negative mV it donates electrons that neutralize free radicals in the body. Some scientific types like me believe that this is the biggest reason for the generally positive results claimed for alkaline ionizers, along with increased consumption of water and the so-called placebo effect (if a room full of people convince you that you will feel better then you probably will!).

However, you don't have to buy a \$2000 to \$4000 alkaline ionizer to enjoy the benefits of reduced antioxidant water. Water can be chemically modified to a negative ORP state and donate massive quantities of electrons. There are special cartridges, ORP devices and tablets that "jump-start" pure water to a high negative ORP (e.g., -250 to -750 mV) level. They can be an inexpensive and convenient way to benefit from this new health concept and help deal with the challenges of today's epidemic of oxidative stress.

## **So now where are we, dear reader?**

We're going to put what we've learned all together and show you how we make ideal healthful drinking water that can be tailor-made for the individual (pregnant woman, newborn, child, teenager, healthy adult, ill adult, elderly, etc.). Ideally, the composition of our drinking water should change as our unique physiological needs change. Water can be so much more than wet and hydrating!

**Step 1: Make pure, contaminant-free water** with a high-quality distiller or Reverse Osmosis (RO) system. Make sure this comes from a reputable source (I'm not big on Chinese-owned water system manufacturers) with good customer service and technical service to back it up. By the way, countertop distillers and RO systems can be some of the best values because they can be easily cleaned and serviced by the user.

**Step 2: Mineralize and structure the water** with a wide variety of elements from the Periodic Table. You don't have to focus on the primary minerals such as calcium, magnesium, potassium, phosphorous, sulfur, etc. because these are available in foods, superfoods and supplements and they may be more difficult to dissolve. Focus on the 70+ trace elements in as natural and unadulterated form as possible. Seawater sources are my preference (unheated without additives is best) but there are a variety of good mineral and trace element additives on the market. The degree to which you mineralize your drinking water should depend on your physiological needs but for now, I recommend maintaining 150 to 450 mg/l of a wide variety of minerals and trace elements in drinking water depending on your individual needs.

**Step 3 (optional): Modify the water to have a negative ORP** by using one of the new active-

hydrogen chemistries now available. The better tablets and powders available can achieve very strong antioxidant - ORP (> -500 mV) which is higher than most alkaline ionizers are capable of. Always give these additives a few minutes to react to their full capability. Realize too, that one can probably over-antioxidize, so use these products when demands are being made on your physical, metal and emotional condition and oxidative stress is likely.

**Step 4 (optional): Alkalize the water** with real "alkalinity" containing compounds such as sodium bicarbonate (baking soda), potassium citrate or some of the wonderful mixed alkalinity formulas that can be purchased from any health products supplier. It is not necessary or wise to alkalize the body when it is not necessary. Those on a natural and effective alkaline diet (raw foods, green juices, etc.) are likely to have adequate alkalinity reserves already. Monitoring one's saliva and urine pH can be useful in determining this. Ill health, however, can usher in an immediate need for consuming water with "alkalinity" on a daily basis.

**Step 5 (optional): Energize the water** with the method of your liking - vortexing (my personal favorite), frequency or holographic imprinting, magnetic effects, etc. Science has not caught up with understanding and defining the physiological benefits of these energetic enhancements so for now you should educate yourself (I highly recommend read-

ing the excellent book "Dancing With Water") and use your higher intuition (which may conclude it's of no significance).

## **Water for bathing and showering - caveat emptor!**

Now we come to the least recognized part of the healthy water puzzle but no less significant in terms of risk to our wellbeing. Contaminants present in public water supplies actually form when chlorine disinfectants react with natural organic matter. Total Trihalomethanes (TTHM's) are the most common culprit and are considered a human carcinogen with no "safe level". TTHM's are present in virtually every chlorinated public water supply. This contaminant vaporizes in the shower and bath and can enter the body orally, by inhalation and directly through the skin. While chlorine and chloramines disinfectants are not anywhere near as health challenging as TTHM's it is beneficial to reduce them to low levels too.

The most important message I have for readers regarding this issue is that popular shower filters, no matter how expensive and no matter what they may claim in their advertising, are no match for these types of contaminants. The simple reason is that effective reduction of TTHM's requires minutes of contact time with adsorptive media (i.e., activated carbon). But, water passes through shower filters so quickly that it is in contact with the active media for just a few seconds. Case closed.

So, what to do to protect you and your family from these unhealthy contaminants while bathing? The only practical solution is to install a properly designed Point of Entry (POE) whole house filter system. It will use the highest grade of coconut-shell activated carbon and the amount of this carbon will depend on the rate that water passes through it and the volume that your family might use in a year. A typical four-person residence would require at least 1.5 cubic feet of this media in a tank that all the water entering the home will pass through it. If the municipal water supplier (call them) uses chloramines for disinfection then a "catalytic" form of this carbon should be requested. Any competent professional water treatment dealer should know this like the back of his hand. Avoid buying POE systems from the Internet because they will not understand your local water conditions and other important details. There's much more I could say on this topic but these guidelines should protect you from making big mistakes.

## **Final comments**

The pursuit of safe and healthful water for drinking and bathing is a virtual minefield for even the most astute wellness-minded consumer. More importantly, your pursuit should include educating yourself and allowing the promoters to "duke it out" with scientific fact and sound documentation. Then you can come back and ask me... *pha*

## **About the Author:**

Robert Slovak is a degreed Aeronautical & Astronautical engineer best known as the co-founder of Water Factory Systems. Since the early 1970's Robert and his brother were among the early developers of the practical application of Reverse Osmosis (RO) technology (a monumental scientific achievement). The successful innovations encompassed home and office RO drinking water systems, laboratory purification, hemodialysis, seawater desalination, spot-free carwash, microchip production, bottled water production, water vending and scores more.

The brothers' company continued to grow and through hundreds of seminars, presentations, articles and a book on water purification, Robert became one of the best-known figures in the water industry. In 1989 Water Factory Systems was purchased by the publically-traded Commercial Intertech/Cuno group, a world leader in fluid treatment. Since then, it was acquired by the 3M Corporation, which continues to market many of his original products.

Officially retiring from the water industry in 1996, Robert went on to bring his knowledge and experience to Brazil and other international markets. While in Brazil, he came upon a little-known 115 year-old medical discovery known as Original Quinton Marine Plasma (after the famous biologist René Quinton). This ocean-harvested nutraceutical is still

being produced and used by doctors throughout Europe. Having been a student of health and nutrition science for decades, Robert recognized the remarkable history of this product in supporting a wide range of the most difficult health conditions. He and his team now import this Original Quinton product for distribution to medical practitioners throughout North America. It is also available to health-seeking consumers under the name QuintEssential.