Water Facts, Water Fallacies, Structured water, Water Filtration, Purification and Treatment methods ©2017

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These days it seems that water is no longer water. We have dozens of different brands of bottled water in every store. There are water-dispensing machines in front of stores everywhere we look. Home centers, discount stores, and special water purification companies are selling a myriad of different types of water filtration and purification devices as well as zillions of different brands of bottled water. HELP! Which should we use? What filters or purifiers produce the healthiest water?, etc. ad nauseum……

In this article, I will do my best to provide you with as much information as I can, while at the same time attempting not to confuse you any further. This will not be a simple task.

Our bodies need water in order to carry nutrients into our cells as well as for carrying waste out of our cells. Since water is a universal liquid in our cellular makeup, it stands to reason that better water would be better for our health. I strongly believe that this is true, but what is better water?

Let's begin by looking at some of the **properties of water**.

WATER PH (and body fluid pH):

Water has a pH, which is to say that it can be measured to determine whether the water is acid, neutral or alkaline. The pH scale goes from 1 to 14 and 7 has been defined as neutral. Below 7 is acidic and above 7 is alkaline (also called basic). The more above or below 7 a substance is, the more alkaline or acid it is respectively. For example, a pH of 2 would be very acid while a pH of 12 would be very alkaline. By the way, you can get just as badly burned by either very acid or very alkaline liquids.

From my research, it appears that for the average person it would be beneficial to consume water which is in the neutral to alkaline range**. Although there is not a great deal of research on an optimal water pH for humans and animals, I believe that it falls somewhere between 7.0 and 8.5 since that seems to be the range of healthy natural water which traditional healthy societies and animals have been consuming for all the years we have been on this planet**. Natural water (lakes, streams, wells, etc.) has accumulated lots of dissolved minerals (which is measured as TDS or total dissolved solids, by the industry) and minerals raise the pH of water.

Today, we often consume acidic bottled water (with its healthy minerals removed by reverse osmosis or distillation) and eat the wrong, overcooked or over-processed foods. To help nudge our body's pH back towards where it belongs, I believe that the water we consume should NOT be acidic (below 7.0), like most of the cheap bottled waters. If the water you generally drink is below 7.0 (if a bottle does not list the pH, then it is almost always below 7.0), then I would have to say that you are doing your body a disservice and should search for water that is at least 7.0, which is neutral. There are very high pH waters also available in some areas. Since, in most of

the world, the natural springs, wells and streams, which we used to get our drinking water from a long time ago, have a pH of about 7+ to 8.5, I recommend drinking water in this range. I do not recommend the much higher pH water as I fear that long term consumption of water higher than 8.5 might possibly push our pH too high but this would of course vary from person to person.

If you get pH test strips, I suggest that you test different bottled or canned waters, juices, and sodas (if you care little enough about your health that you still drink processed juices and sodas). Never put the strips into a substance that you will be drinking since the strips are coated with chemicals. Always test a small amount in a separate glass. You can purchase pH test strips at any laboratory supply house and many pharmacies. My favorite type, for ease of reading, are the strips made in Germany by Macherey-Nagel and marketed in the U.S. (mn-net.com). Make sure you get the ones with 3 color squares on each strip. The exact product is Macherey-Nagel, 921-20, pH-Fix 4.5-10. They can sometimes even be found on Amazon. If you wish better accuracy, such as what is required to see how diet can change urine pH, you will need to purchase a pH meter. The strips just show an approximation. pH meters (I own two) give a far more accurate test result, but you have to also buy 2 different calibration solutions to recalibrate the meter before doing each test and most people reading this article won't need that much accuracy or want to go through that much trouble and expense. The benefit of the meter is that it measures pH in MUCH smaller units. As an example, a pH of 7.35, 7.40, 7.45, 7.50 and 7.55 will all look like 7.5 on a pH strip even though they are VERY different from one another. The meter would show each of these as I have written them above or even more accurately like 7.40, 7.42, 7.43 etc. In research, or when trying to see if the dietary changes you are making are moving your pH in the right direction, the far greater accuracy of the meter can be essential due to how slowly these changes occur in our bodies.

Although this is NOT an article on pH (I may do a video or MP3 on this topic soon so you may wish to take a look in those areas of my website once in a while), since most people who talk about pH have this all wrong, I should mention just a few important things about human pH ranges. Healthy blood pH appears to be between 7.40 and 7.45. There used to be a fantastic piece of office laboratory equipment called the BTA machine, which stood for Biological Terrain Assessment. I was a professional observer during a pH study of cancer patients using this equipment many years ago at the Livingston Foundation Cancer Clinic in San Diego, California. This was the only equipment I know of which could accurately test the pH of the Blood (since blood pH changes within just a few minutes after it is drawn). Unfortunately, the BTA machine is no longer being made.

The body works hard to hold the blood pH in the 7.40 to 7.45 range. However, due to very acidic processed foods, as well as the very acid drinks such as coffee, carbonated beverages and citrus juices, the body does not always succeed in holding the blood pH in the 7.40 to 7.45 range. Inflammation also can cause a drop in pH -- such as from all of our wireless and cordless technologies. As long as the body can excrete enough acid in the urine (making our urine pretty much always acidic), it is able to succeed in holding the blood and saliva pH in the alkaline range of good health. Since we can no longer test blood pH, we have to rely on saliva pH to check body pH health status. If your body is eliminating enough acids in your urine so that they don't build up in your tissues, then your saliva pH (tested at least 30 minutes away from food) will be 7.0 to 7.5 on a good pH test strip (of course a meter would be more accurate). Anyone

with a saliva pH below 7.0 has a body that is out of range and in trouble -- hopefully not yet having cancer, but on the way in that direction. During my observations of the pH Study at the Livingston Foundation cancer clinic, I learned that cancer patients have this buildup of acids in their tissues and intracellular matrix. This caused their blood pH to be below the optimal range, although not below 7.0 or they would already be dead. Their saliva however, was always below 7.0, and their urine had become alkaline often as high as 8.0 to 8.5 since the body was no longer able to expel/excrete the excess acids. Quite fascinating indeed.

WATER CONTAMINANTS:

Water contains numerous contaminants -- some good and some bad. Since pure water is H2O, any substance other than this particular molecule, could be called a contaminant. In order to have pure H2O, you must have either high-quality, steam-distilled water or special chemically-deionized water. I do not believe that either of these is healthy to consume and we will cover this later on. Since all other substances would be considered contaminants, this would include numerous minerals such as: chlorine and chloramines, fluoride, lead, asbestos, pesticide/herbicide/fungicide residues, and all the initials you may have heard of such as PCB's (Polychlorinated biphenyls), THM's (trihalomethanes), MTBE and others. There are also many residues from the use of chemical fertilizers and laundry detergents such as nitrates and nitrites, as well as sulfates and sulfates, and quite a few others I am not listing. You could even refer to beneficial minerals; those that we want to have in healthy water, as a contaminant to pure water, so we need to be careful with the word contaminant. Any mineral would definitely be considered a contaminant if it were found in laboratory grade pure water but not in a healthy drinking water where we want them to be present.

Different waters appear to have health-giving benefits from properties other than those listed above. Water can have an electron charge that turns it into an antioxidant and it can occur with different sized "clusters" of H2O molecules. The larger the number of molecules of water that are clustered together, the harder it is for the group of water molecules to get into and out of your cells. Since water needs to bring moisture in and poisons out, smaller clusters of water molecules would seem to be beneficial. Studies which have been done to analyze the "healing waters" of the world, such as the water in the Lourdes in France, have shown these water to have these apparently-beneficial properties. Additionally, these special waters have a pH higher than 7; they are not contaminated with toxic chemical residues; and they have their molecules in smaller cluster sizes oftentimes referred to as micro-clustered water or ionized water. Later in this article, I will discuss the methods currently available for taking advantage of these possibly special properties of structured and energized water. If you are really technical or crave information as I do, then you might consider buying a water test kit from NTL Labs and paying them to analyze your incoming unfiltered city or well water. This will tell you what it contains and can greatly aid you in determining what type of filter you will require now that you know what needs to be filtered out. Their web site is www.NTLlabs.com and the two tests I recommend most often, listed in the on-line store on their site, are currently #9002 Watercheck with pesticide option if you are testing well water, and #9503 City Check Deluxe if you are on a municipal water supply. They also have many, less expensive kits which simply test for fewer contaminants.

THE CONTAINER MAKES A DIFFERENCE:

To start deciphering which waters are healthy to drink I will start with bottled water. The first thing that you need to know is that just because it comes in a bottle and not from your faucet does not mean that it is healthy. Neither the label nor the advertising may help very much in this determination. There are no good truth in advertising regulations protecting the consumer, or else, we would not have multiple companies all claiming that they have the best detergents, the best soap, the best truck or car, etc. What then should the consumer look for? Let us begin with the container. Since it has now been determined that both soft milky white and the harder clear plastic bottles can leach harmful contaminants into any foods in contact with them, glass bottles would certainly be preferable. A close second place goes to high quality stainless steel water bottles. Another possibility -- according to the analytical chemist, Warren Clough -- is the #7 polycarbonate plastic. Although we now know that this leaches chemicals as well, it does so more into fat containing foods and much less into water, especially if the water is not allowed to get too warm or hot. Therefore, the container becomes especially important if the water is either stored in hot places such as your car or if it is stored for many months as it often is prior to use. Under these conditions, you should transfer the water you carry with you or store at home into glass or at least high quality stainless steel containers. I realize that for convenience, simply buying whatever is in the store and leaving it in its original container is far easier; but this article is about health not convenience. The jury is not completely in on this issue yet and with good science, it never is. We continue to learn new things and find that what we had been saying before turned out to be false. The best idea for me, and what I do in my home and office, is to have the best filtration tanks on my water supply, as well as a Crystal Blue Enterprises stainless steel water energizer, which the filtered water passes through next (I will be discussing this technology later), before entering the building to be used. In this way, I am doing the best I can to make healthy water and then it goes into glass pitchers and is stored in the fridge or stainless steel water bottles for the car or consumed right out of the faucet at room temperature. As a side note, since I am an investigative information nut, when I placed a laboratory temperature data logger in a few different colored cars on a hot day (both with sunshield sun protectors over their windshields) the internal temperature of the car -- which a water bottle would be sitting in -- reached 141°F in the white car (mine) and 158°F in the darker blue car. This is just one of the reasons I will not own a dark-colored car.

TASTE:

Taste is one of the worst indicators of water quality since, for most people, a high concentration of healthy minerals will impart an undesirable taste to their water. I suggest that you call each company to get a copy of their most recent independent laboratory analysis of their water. If a company cannot supply this, then who knows what may be in its water? Most companies have their name, address, and often a phone number on the label. When you get the analysis, look for lead, mercury, nickel, asbestos, sodium, aluminum, chlorine or chloramines, fluoride and other substances that we should all be trying to avoid. Now look for the beneficial minerals -- you know, the minerals that you are used to seeing on your bottle of supplements. Compare the lab reports from the waters which you like the taste of and choose the best one. Get some pH test strips and test each water. As I mentioned earlier, you are looking for a water with a pH of 7 (neutral) or greater but not less than 7. Be sure to read any instructions on the pH strips regarding

how long to leave the strip immersed before making your reading. When you find a water that you like, and it has a clean bill of health and an adequate pH, drink it! The amount one should drink varies between 1 and 2 quarts per day depending on body weight and level of activity. It also varies depending on your other food and drink consumption. I drink an average of one quart or more of raw grass fed whole milk per day and this counts for some of my water. It is also preferable to drink your water between meals. When you drink water with a meal, it becomes soup in your stomach and may not count in the same way towards your body's water requirements. You can often get lab reports from the vendors which operate water machines outside of stores as well as the bottled water companies. Since water quality can change and different local water brands are available in various states, I prefer to let you determine which water you like for your area. Good health requires some effort on your part and those willing to exert this effort will generally be the ones who are healthier throughout life. I do find that Volvic and Fiji bottled waters seem to meet my requirements

FILTERS AND OTHER WATER PURIFICATION DEVICES

Now we get to filters and other water purification devices for your home. Water devices come in many designs. They range from simple carbon filters, which either mount on the end of your faucet or where water drips though the device and into a pitcher, to much more complex, single- double- or triple-cartridge filters. The amount, type and quality of the filter media (the substance which removes the contaminants) has a great deal to do with how long it will do its job and how well it can remove various contaminants. I cannot recommend either the style in which the entire unit hangs from the end of your faucet or the style in which the water drips through the filter into a pitcher. In my opinion, both of these units have far too little filter media (generally activated carbon) to do an adequate job for any length of time, if at all.

Looking for the WQA (Water Quality Association, wqa.org) and NSF (National Sanitary Foundation, nsf.org) seal of approval, as well as possibly how many gallons the unit is NSF approved for, **may** give you a **small** amount of additional information; but not as much as you might think. Neither of these organizations tests for the filter's ability to reduce or remove most of the water's possible harmful contaminants. In most cases, they are only testing for chlorine removal and this is the easiest chemical to remove. A growing number of municipalities now add or substitute chloramines instead of chlorine. Chloramines are far more difficult to remove than regular chlorine. And, of course, drug residues, pesticides and herbicides and other possible contaminants, including lead, also are rarely tested for.

The larger filters have their own housings and either a hose to connect them to your faucet or else you will need a plumber to connect them under your sink and an additional faucet on top for access to the filtered water. A few of the well-known brands which do a good job include: AquaCera™, Everpure™, Seagull™, and Multi-Pure™. I trust and respect these four brands and they will all do a good job if they are properly installed, if the internal filter cartridges are replaced at appropriate intervals, **and if they are rated to remove the particular contaminants that your water has been shown to contain**.

If the filter cartridge is not replaced when it should be, then it may no longer do the job for which it was designed or has been rated. Please contact the individual company directly to get their

most up-to-date information on what they claim their filters can remove and any documentation they have, preferably from an independent analysis organization, to prove their claims (for a proper comparison). If anyone tells you that their product is far superior, I would either ask them for independent lab studies that they have paid for to prove this or purchase from someone else because this person is either very biased or else is trying to sell the only one they carry because it makes them the greatest profit. There are definitely differences between the brands I mentioned, but they are all excellent filters. I have used and installed them all in the past and although I now only carry the AquaCera as my personal preference, I will continue to recommend them all without reservation except for you to be sure that the one you are considering, does in fact remove the substances you wish to filter out of your water . If someone tries to tell you that their filter is just as good as one of these, ask for the lab analysis as I have already said above. You should expect to pay between $150 and $350 for these filters. In many cases, such as with the Aqua Cera, you may need to pick the specific filter cartridge that will be installed inside the housing(s) to help determine what the unit can remove or reduce in your water. As I update this paper in March of 2017, the cartridges I recommend for a dual-filter Aqua Cera are a CeraMetix and an AquaMetix, one in each of two filter housings. If you own your own home or condo and you wish to filter all of your water, then you need a **Whole House filter** referred to in the industry as a POE or point of entry filter. The ones I have been discussing above are called POU or point of use filters. Currently, the best filter media for removing chloramines, chlorine, lead and numerous other contaminants is the AquaMetix block from AquaCera Corporation in Michigan. They have just released their whole house unit (yesterday) after almost 3 years of development and extensive testing. . Other more costly Whole House filters include the WaterBoy™ from Superior water and the filtration units (but not the water softeners) from LifeSource Water Systems. Neither has the much newer and I believe far better filtering abilities of the AquaMetix Block, but they are both good units if they will remove what you need removed. **One important detriment to these other two filters, although they do a very good job, is that they must be flushed or back flushed numerous times a year (usually every week or so). This means that their units automatically (on a timer) send hundreds of gallons of fresh water through their filters on a regular basis in order to clean out particles and contaminants and to make sure their filter media is re-packed adequately so as to do the best job. This is a HUGE waste of water which is a precious resource. In a couple of cities of California, flushing systems have been outlawed due to their water wasting nature. The solid block type AquaMetix filters in the AquaCera housing, cannot develop "water channels" as they contain no granular or powdered media and so they remain at full ability without ever needing to be flushed every week (or ever).**

CHARCOAL FILTERS:

Charcoal filters (various types of activated carbon or carbon block), or in the case of the AquaCera activated carbon of various types and silver-impregnated carbon or porcelain in block form, will remove the petrochemicals and chlorine and chloramines that we do not want in our drinking water. If your city has a problem with lead, due to old pipes in an older city, then make sure the unit is rated to remove lead. Some younger cities do not have anywhere near the lead problem of older cities because they are not riddled with old underground lead pipes. An older city like New York for instance is likely to have a higher lead content than a younger city like San Diego. If you want more certainty with regard to lead, since there is lead solder in most

piping and even lead in many faucets, get a unit, which is rated for lead removal. The AquaMetix has the best lead removal ability that I know of. None of these carbon filters remove the beneficial minerals and therefore they do not produce as much of a taste difference as distillers and reverse osmosis units, which will be discussed next. Most types of charcoal filters will not reduce fluoride if you happen to be unlucky enough to live in a city, which fluoridates its drinking water. However, some special types do offer fluoride removal, so you may need to ask for lab tests from the manufacturer. The newest AquaMetix and CeraMetix filters from Aqua Cera do, in fact, reduce the fluoride that most charcoal filter and activated alumina filters cannot reduce. Catalytic Carbon is rated to remove chloramines but again, the New AquaMetix block seems to be doing a much better job and also removes many other contaminants.

DISTILLED WATER:

Distilled water has many proponents as well as many opponents. On one hand, if it is properly distilled and then packaged in glass bottles, it is said to be pure water. This means that it is supposed to contain H2O molecules and nothing else. On the other hand, distilled water does not exist in nature and is referred to by some scientists I have spoken with as "dead" water. Being an active "empty" water (no minerals at all), it has a tendency to pull other substances into itself. When it is stored in plastic containers, it leaches the chemical plasticizers from the container into the water. Throughout history, populations of the world have either consumed water from their local pure rivers, streams, and brooks or from pumped or free-flowing Artesian wells in their areas. Granted that many of these are now contaminated with undesirable pollutants (fracking has made this far worse), but distilled water is still (no pun intended) not a historically natural source of water.

Throughout my 25 year career as a health professional and educator, I have taught the principle of consuming foods as close to the state that nature delivers them to us as possible. Even if we discount those scientists from Germany, Russia and Japan, who say that distilled water is not a life-giving substance and should not be consumed, it is nonetheless not natural in my view.

Water is meant to bring minerals into the cells of our bodies and distilled water will do the exact opposite. I am willing to admit that for a limited time of maybe one to two months it might be an aid to detoxification, but after that I believe it would be doing more harm than good. Personally, I still would not even use it for that purpose. If you have a quality distiller and you regularly change the proper type of charcoal filter that removes the final traces of chlorine and chloramines, you can turn the water back into healthier water. Purchase a bottle of liquid ionic minerals (NOT COLLOIDAL) from your health food store. I recommend Trace Mineral Research™ which contains their trademarked blend called Concentrace™. Add as many drops of this liquid to your distilled water as you can without making it taste objectionable and then shake vigorously to oxygenate the water. Water must taste good or we won't drink enough, so don't put in so much that you or someone else in your family doesn't like its taste anymore. In addition to bringing back the good minerals that were removed in the distillation process, adding these minerals will also raise the pH to a more healthy level. To purchase the Trace Mineral Tablets and/or the Concentrace Trace Mineral liquid look in your local health food store or try www.EliteAlternatives.net

REVERSE OSMOSIS:

The next purification process I will discuss is called reverse osmosis and there are many different qualities and configurations of these systems. A high-quality RO system with a built-in water quality (total dissolved solids) indicator will contain 3-5 filters in addition to the RO membrane and will generally cost you between $350 and $550 installed. The variance is due in part to the amount of work necessary to install the unit under your sink and install its separate faucet and holding tank, the quality of the unit itself, and last, but certainly not least, the percentage of profit that the company wants to make when they sell you the unit. This last item is by far the largest variable. Some companies insist on making a tremendously high profit margin especially if they have to pay a commissioned salesperson. If you buy from a small owner/operator/installer, you generally can get the best deal. Be sure to check for proper licensing and insurance of your installer/plumber. Remember, if it leaks there could be a great deal of damage so keep your homeowners or renters insurance up to date..

Reverse osmosis is the process by which water is forced (by water pressure) against a membrane (the RO membrane) and only the pure water gets through the membrane and into the drinking reservoir (tank). Most of the minerals, both good and bad, are unable to get through and are washed down the drain with the waste water (called brine water because the minerals make it salty). As long as the membrane is working properly, generally for between 1½ and 3 years, it will produce water with virtually no minerals. Since toxic fertilizer residue such as nitrates, sulfates, etc., are in fact minerals, these are also removed. Fluoride, if you are unlucky enough to have it in your water, has been reduced by 90-100% on all the units I have personally tested, depending on how well your RO membrane is doing its job. In order to remove the chlorine and chloramines, as well as the petrochemical residues from pesticides, herbicides, fungicides, etc., one or more charcoal (activated carbon) filters are always a part of any good reverse osmosis system. These filters generally need to be replaced about once a year. If your water gets tested to determine whether these filters are still doing their jobs well, this period can sometimes be extended considerably. As with the distilled water mentioned above, RO water has been made basically mineral-free and should have the good minerals replaced and the low pH raised by the addition of the same liquid minerals I spoke of earlier. A properly-operating RO system, which is serviced whenever necessary, will produce very good quality drinking water if you add some minerals back in before consumption.

One of the big issues with RO systems is their tremendous wasting of good clean water. The wash water or brine water which rinses the accumulating minerals off of the RO membrane, so it won't clog, is generally sent down the drain, even though it is simply your fresh, clean, drinking water with a tiny amount of minerals in it. This is why some parts of the country have outlawed reverse osmosis systems. Most systems waste 2-4 gallons for each gallon of drinking water produced. A huge waste. Some companies have set up their brine system to only waste one gallon for each gallon produced. This works but greatly decreases the life of the membrane as it is not kept as clean, which is simply considered a necessary or required tradeoff.

ULTRAVIOLET LIGHT TREATMENT:

Ultraviolet light is sometimes used as a final method of making water safe to drink. If an adequate amount of this light is used to bathe the clean water, then it can kill bacteria, fungi, and viruses. . If there were any of these in the water, the dead ones are still there. It is not a filter and does not remove anything else.

I spoke with a number of experts in the use of UV for water purification. They all said that the UV treatment systems incorporated into the Reverse Osmosis systems give a false sense of security and waste the purchaser's money. When I asked for an explanation, they all agreed that, due to a too-rapid water flow speed, inadequate strength of the UV light and partial UV filtering of the tube that the water is passing through, there is not enough UV strength or contact time to kill pathogens in the manner the manufacturer has claimed.

Personally, I believe that using this additional method, generally called UV treatment, is overkill and not needed with a good system. Using this unnecessarily increases the price of the unit without giving it an additional benefit. If the system you like best has this feature that is fine, but I would not buy a system just because of it. Apparently, an ultraviolet system capable of sterilizing the flowing water as these manufacturers claim would be a commercial device costing more than their entire reverse osmosis system!

WATER IONIZING OR PH INCREASING MACHINES:

These devices are sometimes called micro-clustered water or water ionizer machines and they require a wall outlet for electrical power as well as a connection to your faucet for their water supply. The purpose of these machines is to both filter the water, and to make a number of molecular changes which will turn the water into a possible healing water as discussed at the beginning of this article. Although I have heard some interesting stories regarding the results obtained from drinking this special water and although I admit that these devices are being used by many, I am not making any health or medical claims of any kind for this water. Making claims is for research scientists and people who want to get themselves in trouble with the FDA.

There are many different companies presently importing and selling various micro-water or water ionizer machines in the United States. I can only vouch for the honesty and integrity of the one I have dealt with for many years although certainly some of the others may have fine products available. For more information and a copy of a published article, please call the company directly. The company name is High Tech Health. The machine is the AKAI water ionizer and the importers web site is http://www.hightechhealth.com. With the AKAI water ionizer, the water passes first through a 0.1 micron-activated carbon filter, which will effectively remove parasites and bacteria, as well as chlorine. This filter is rated at 6000 liters which is approximately 1600 gallons. With most brands of filters, you are guessing when to replace the filter cartridge. You either waste money replacing it much too early just to be safe, or you wait too long and unknowingly drink poorly-filtered or unfiltered water. With this unit, there is a digital meter that lets you know how many liters have been filtered so there is no guessing. After the filter, the water passes into some sort of special chamber where the other changes take place. The water is split into its acid component which is sent down the drain (or catch it to water your

plants or to wash your face) and the alkaline water, which is used for drinking. In addition, the water is given an electron charge which is said to turn into an antioxidant, as well as break down the size of the clusters of water molecules making it more able to get moisture into your cells. The water also has something called a Redox potential which is altered to make it healthier in yet another way, but a description of this is beyond the scientific scope of this article. These AKAI units cost around $1,400 and there are even MLM (multi-level marketed) devices made by Kangen, which cost many times more; but I do not believe Kangen to be any better.

Since the micro-clustering and higher pH of natural healing waters is not caused by an electrical apparatus such as these, it is possible that changing the water in this unnatural manner may not be the best way to alter water for human consumption. I personally know of people who feel they have been greatly helped by these machines, as well as others who feel the water produced by these machines may have harmed them. Years ago, I recommended them highly and I am now far more neutral.

Some of the first clustered water products were originally developed by Dr. Lee Lorenzen called Zunami water. I met Dr. Lorenzen some 10+ years ago when he was lecturing on clustered water and the Japanese research being done on it. His products are liquid concentrates that you add to distilled water in order to change the molecular structure of the water molecules. He told me that it will not work well with fully-mineralized water. It will, however, give you the benefits of micro-cluster technology, which they claim will make the molecules look like snowflakes, without such a large initial monetary outlay. The current version of this type of water, which I do believe would be beneficial for some people, is called Double-Helix water and is available from www.DoubleHelixWater.com Whether it will add sufficient benefits over and above drinking a good quality water as described on these pages, I am not certain. I do not expect that it would give any additional benefits if you install a Crystal Blue unit as will be explained next and consume water treated in that way.

Another far more natural method for structuring and energizing water is discussed next.

Structured and Energized Water

Currently (2016/2017) there is a great deal of misinformation on the web regarding energized and structured water. Companies are making totally unfounded claims for their products and devices with zero independent study or research and no true actual controlled trials of their technology. This does not necessarily make all of these products bad or useless; it simply makes them suspect and in need of further study. Some examples are the companies making flow-through structuring units which contain cheap, irregular plastic balls instead of high-quality glass or borosilicate or ceramic balls, which the water touches as it flows through the device. The borosilicate glass is far more costly and so the cheap knockoffs do not use them while still making crazy claims for their very expensive, but cheaply-made, products. I consider the original to be the stainless steel Grander Water units developed/invented by Johann Grander in Austria decades ago. I carried, used on my home and promoted these for probably 20 years and I feel certain they still do a good job. Their videos on www.GranderWater.com give us some of the original information proving how little we know about water and the benefits we can derive from using some kind of high-quality, structuring/energizing device on our homes, in our

businesses and in commercial agriculture. The movie **What We Know Is a Drop** should be viewed by everyone, just as everyone should read The Field by Lynne McTaggart. After investigating many of the more recent entries into this market (Grander has been around for over 20 years), I was amazed at the quality differences. It seems that often (but not always) the crappier-quality products have the most forceful (but misleading) marketing. After investigating many of the products currently being sold, I finally found an unbelievably-ethical individual, Jim Dooley, to be at the forefront of this technology. His ethics are as perfect as I have ever seen, to the extent that the product and its continued improvements are far more important to him than any profit motive or profit potential for the devices he manufactures. In fact, as his continued testing and research was and continues to be carried out in many countries and with many scientists, I had sold quite a few AP-1 home units and have one on my house/business. During the first few months of 2016, Crystal Blue Enterprises, Jim Dooley's manufacturing company, had to close down for improvements, expansion and modification to enable it to better meet the growing need for their home and commercial units. As I write this in December of 2016, I have had 8 units on back-order for almost 12 months! Jim has been working very hard to get the new manufacturing plants in the U.S. and two other countries up and running to his satisfaction. This has finally been completed and production is now in progress so I should be receiving my order by the end of January 2017.

Let me give you a basic idea of what these units are and what they do. The units are multi-walled stainless steel and one wall (tube) of copper. In between two of the stainless walls, pressed, at thousands of pounds of pressure, are dozens of different minerals and crystals in powdered form in such a way that they do not touch the water. They do, however, transmit their energies into the water as the water passes through the device. The water, which has now been scientifically proven to have a memory (please read **The Field** by McTaggart and watch the movie **What We Know Is a Drop**), absorbs this beneficial energy into the water and the structuring of the water is also changed by the way it flows through the packed-glass balls. The research has proven in both plants and animals that this water has numerous benefits. You can read the research on the Crystal Blue Enterprises web site (www.CrystalBlueEnt.com) in the testimonials area.

Before I end this section, let me explain a HUGE problem in relating energy research to the public and even to professionals. In medicine, which this is not, physician's minds have been so closed during their medical school training, that they actually believe if you cannot measure something with an instrument, or have been told that something is bogus, that it is, in fact, bogus with no further investigation of their own, very sad. A great deal of what is currently being researched in the fields of energy and energy medicine cannot be sensed or tested with any currently available scientific instrumentation. Because of this, they must set up actual experiments to determine whether results are different (better or worse) when the energy or energy device being investigated is used in an animal or plant- (or other-) based experimentation. Rather than writing a lot here about the studies which have been carried out, I refer you to the Crystal Blue web site. You may also wish to go to Grander Water's web site and watch a number of their videos. Although Grander is a much older technology, which does not have all the additional energies utilized by the Crystal Blue, their excellent videos do a great job of showing how various industries in Europe have seen truly remarkable benefits from simply (not really so simple) adding beneficial energies to their water.

SHOWER FILTERS:

The last item on the list of water filtration is related to bathing water. I have heard from a number of people I trust, who have stated in lectures and in writing that most people do not realize that a great deal more chlorine and chloramines are absorbed through the skin in a single shower or bath, than by drinking that tap water all day long. Although I have not found any research on this, it seems plausible. So if you purify your drinking water prior to purifying your bathing water, you're doing things backwards. I often suggest that my clients and students put in a shower filter first and a drinking filter second. A good shower filter must contain at least one pound of a substance known as KDF™. Carbon filters do not last long enough to be useful for the number of gallons used to filter bathing water unless you use a large, 10-inch, housing-style shower filter. Some of the largest shower filters that I have cut apart and tested are some of the poorest units available. They cost a great deal of money, have seemingly fantastic warranties, and actually do not remove chlorine and chloramines for even 4-6 months in normal use. Look for both WQA (Water Quality Association, wqa.org) and NSF (National Sanitary Foundation, nsf.org) rating of 10,000+ gallons and one pound minimum of the KDF™ filter media. You want to get at least a partial validation that your filter is doing what the manufacturer claims. Moister skin and more manageable hair (chlorine and chloramines are very drying) are often noticed within the first few weeks or even sooner. These days, when a growing number of municipalities are switching from chlorine to chloramines, we have an additional problem.

For many years I have been recommending the CQ-1000 by Rainshow'r, a great little shower filter made in the U.S. by a very reputable company. I still carry their unit, but since KDF does not do a great job of removing chloramines, I now recommend, for those willing to pay the extra and have the installation done by a plumber, to go one large step better. Chloramines are a great deal more toxic to the body but are also far more difficult to filter out. If your area uses chloramines (call whomever you pay your water bill to and ask them) then you would be better off having a plumber install a full size 10 inch filter cartridge housing with an AquaMetix block filter in that housing. The AquaMetix technology will remove chlorine **and** chloramines as well as most all of the other contaminants you don't want in your shower water including heavy metals. Below is a photo of the difference between the two filters showing their size difference and the AquaMetix cartridge which goes into the 10 inch housing. The rainshow'r filter simply spins onto the end of your shower arm and then your shower head (or their far better Power Shower head) gets attached back onto the other threaded end of their unit. With the large 10 inch housing with a ½ inch inlet and outlet threads, your plumber must remove the metal shower arm from the wall of your shower and replace it with what is called a straight nipple which in turn he/she will thread into the top of the 10 inch housing. Your shower arm will then be threaded back into the other side of the same top and your shower head will go back onto this angled shower arm as it was before. Then the housing is assembled with the AquaMetix cartridge filter inside and the cartridge should be replaced approximately every 1 to 2 years depending on how many people use the shower and how often and how long they shower each time. I recommend that a licensed plumber do this to make sure that the correct type of either Teflon tape or thread compound in used on all the threaded parts so that you don't end up with a leak inside your wall that you won't even know is there until it's too late.

For those of you who take baths rather than showers, the task is far more difficult. Water flows into the bath tub at too fast a speed for any small filter to handle the job. If you own your home or condo, then I suggest you look into having a whole house filter installed on the incoming water line (and a Crystal Blue unit if you can afford them both). A good unit can be installed by any knowledgeable and reputable plumber. In order not to be ripped off and pay far too much money, let me give you a few pointers. What you want for best results and least expense is at least a 20-inch Big Blue™ or similar oversize filter housing along with a quality replaceable carbon cartridge inside the housing. The cartridge should be rated for particle removal at between 20 to 50 microns so it does not clog up before you replace it. For chlorine and chloramine removal it should be rated as high as you can get; but, certainly, at least 30-50 thousand gallons. You do not want to have to replace it more than two times per year and fewer times is easier and less costly. The replacement cartridges should cost you approximately $45 - $80 each, plus labor if you have someone else do the work. Remember, being cheap by using poor-quality filter housings and doing things you are not adequately skilled to do may cause you to come home to a flood. To improve this installation, it can be set up with a 10-inch Big Blue pre-filter fitted with a 30-50 micron particle only filter to reduce the likelihood that the more expensive carbon filter will foul or clog up prematurely. I highly recommend that a U.S.- or Japanese- made “ball valve” be installed on both sides of the installation for safety when changing filters. For the best possible setup, a full bypass should be designed with ball valves. This will allow you to run the house water even if a leak or other problem develops in the filter chamber. Any qualified plumber will understand this description so just let him or her read it to give them an idea of what you want. For those who want the best quality, most burst-proof housings, the filter pods are also available in stainless steel instead of pressure resistant plastic.

Please note that the above whole house filter, although giving you better quality water, may not be adequate as a high-quality drinking water system. The water passes through the filter too quickly for a thorough job as far as drinking water is concerned. It is, however, a whole lot better than drinking tap water.

By March of 2017, I am hopeful that my favorite filter manufacturer will have their new AquaMetix Whole House filters available. **(Just became available March 12th 2017**) These are competitive with other whole house filters but their improved technology, finally available, does a great deal better job of removing or eliminating chloramines and heavy metals than the catalytic carbon and KDF used by other manufacturers or the contaminated bone charcoal from China and India that other manufacturer are now using since all of the U.S. made products is being used in the manufacture of the AquaMetix cartridges from this company. This technology has been available for kitchen and bathroom units for some time, but the whole house units just completed final testing this month (March 2017) and I have been waiting for them for over 2 years. I love companies like this that make sure to get it right and who manufacture in the United States.

FLUORIDE:

Fluoride continues to be one of the two most-used poisons in our daily life (if your water is fluoridated). This article could not be long enough to cover the topic adequately.

A good reverse osmosis system removes fluoride. The Activated Alumina filters which I have tested do not even reduce fluoride AT ALL. Reverse osmosis filters too slowly for use as a whole house filter. The new AquaMetix multi-carbon blocks do reduce fluoride, so when the whole house models are released and tested, we will have better information as to how well they can do this. Please read the excellent book **The Fluoride Deception** by Bryson and **The Case Against Fluoride** by Paul Connett, PhD & James Beck, MD, PhD, Bryson's book is available as a free PDF if you search it on the web. Read these and share what you learn with everyone you know

WATER SOFTENERS:

Hard water (high mineral content water) has been found to reduce heart disease, so I have never recommended the use of water softeners. The first thing I did when I bought a house which had a water softener in the garage was to press the bypass so it was no longer softening my water. Then I had it removed. Since water softeners put other minerals in the water in place of calcium, they turn the water into Harmful to drink water!. This is why companies which sell softeners generally give the homeowner a free reverse osmosis unit to make the water safe to drink again but they don't tell you that this is the reason. The water energizing units (Crystal Blue) somehow make the water behave more like softer water without altering the minerals. This is a much safer and healthier way to get less calcium build up on your faucets and in your water heater without hurting you. It actually helps you instead.