

The Drinking Water FACTS



Important issues for buying the best drinking water system

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A growing number of people are aware of the limitations and health risks from drinking tap water. They understand the importance of finding and putting a better quality water into their bodies to avoid sickness, dehydration, chemical intake and toxic build up. What is also becoming obvious is the myriad of claims and counter claims about the merits of various drinking water treatment choices.

Misinformation leads to confusion, fear and scepticism.

What is not common knowledge is the true quality of water treatment systems on the market. Information here is provided for a balanced view on ionized water purification systems and fair comparisons to some other choices promoted in the marketplace. This is to enable people to make up their own minds with facts separated out from the hysteria, fear and emotive intimidation campaigns of some filtration marketers.

In order to clarify some issues that have been promoted as "fact" by such vested interests regarding what makes for a better drinking water, I would like to calmly and rationally put forward information. This is done to the best of my ability and experience as a long-standing, practising Naturopathic Physician. It is set forth as accurate, truthful and responsible.

Question the motivation of spin doctors confusing the facts

There is a universal principle that is known in esoteric circles. This says that: The whole universe rearranges itself to manifest your picture of reality. Debunkers will always produce facts and figures to justify their single mindedness. Beware of people or organizations that in order to promote the sale of their products, ideas and views, put so much energy into the

debunking of things they see as a threat to their products. Beware of anyone who is consistently negative and critical of others whilst trying to sell his goods and services to the public.

You have to seek out logical and accurate information using common sense amongst the confusion, counter-claims and "evidence" of interest groups who promote themselves by wielding fear and misinformation to solicit your trust and money.

"Misinformation leads to confusion, fear and scepticism"

Expert reviews may be misleading

Medical review articles tend to be of uncertain value as evidence can be chosen or omitted selectively to support the author's opinions. Information contained in such reviews, particularly those written by specialists, can be misleading and may not be evidence based. This leads some to say that expert views cannot be trusted. There is a term called "hired guns."

Consumers need to be very careful when reviewing medical literature. Aside from review articles, medical studies themselves can be biased because they are often funded by industry that has a vested interest. This raises the question of conflict of interest.

The first step to finding

out the truth of any matter, whether it is health-related or otherwise, is to realize that everything you read or hear may not automatically be true. It is up to you to do your due diligence homework and make sure that information you are relying on is from a reliable and genuinely independent source.

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The current mainstream medical focus, and the vast sickness industry that surrounds it, is about disease treatment after the event. People then endure and pay whatever they have to in the hope of getting their health back after losing it. However, robust health is not simply the visible absence of disease.

Brief background to water ionizers

After 40 years research and ongoing medical use in Japan, and more recently in Korea, water ionizers in the last four years have become more extensively known and used among western health care practitioners.

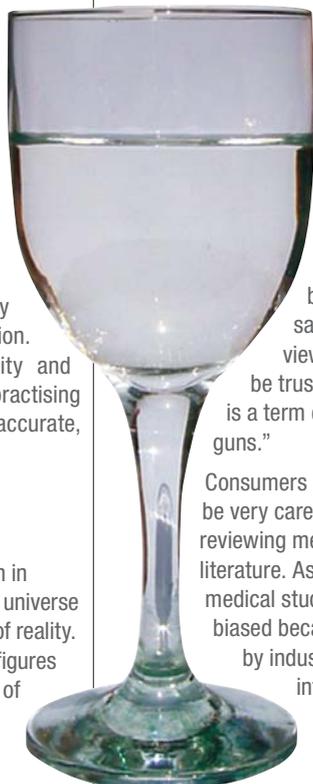
Significant results from scientific studies and clinical work involving this new technology have been reported in various journals and conferences. With years of health-care applications and with millions of water ionizer units being used, it is appropriate to consider some of the current benefits that are being experienced with alkaline ionized water.

This report starts with what natural water should be like and what has happened to this vital human input.

"Robust health is not simply the visible absence of disease."

Natural water

In Nature, water is purified, energized, mineralized and structured as it goes through its cycle of evaporation, precipitation and percolation. Water moves freely and is infiltrated by sunlight as it tumbles and flows around rocks, forming whirlpools and cascades along the watercourses to the lakes and the seas. Natural water picks up



minerals from the soil and absorbs life force as it flows. This healthy, free-flowing, natural water is becoming more and more scarce in the world because of man-made chemical contamination, loss of natural environment and mass water storage needs.



Water and energy

When water is drunk, it must be assimilated before it can be useful to the body.

Natural structures of water can be seen as beautiful snowflake crystals when viewed frozen under a microscope as in the photograph of microclustered water (top right). The appearance of these well-formed crystals has been interpreted as representing water that reflects a beneficial quality. This is in contrast to low-grade waters, polluted waters and treated municipal tap waters, which on freezing, show less orderly crystal patterns, or virtually none at all. These poorly structured waters can be considered lifeless waters.

Hence, the use of a restorative technology that can restructure, remineralize and re-energize tap water must be seriously considered for personal use in an open-minded and unprejudiced way. The need to give careful consideration to restructured water is that there is accumulating clinical evidence that this type of water can be of enormous health benefit.

This is especially so for those people who suffer from various chronic or degenerative diseases.

Incidentally, athletes who are looking for safer ways to improve their performance would not be disappointed by regularly drinking ionized, alkaline water.

Reverse osmosis and distilled water

The only treatments that can totally remove Sodium Fluoride from water are either by reverse

Microclustered water



In its natural, free flowing and unpolluted state, true spring water has a six-sided crystal structure at freezing point. Tap water that has been ionized goes back to a similar energized crystal structure.

Source: Dr Masaru Emoto, "Messages from water."

Tap water (lifeless water)



Photo of tap water cluster at freezing point. It is not natural for water to be stored, dammed, put under pressure and transported through pipes or have many treatment chemicals added to it. Tap water is known as lifeless water.

Source: Dr Masaru Emoto, "Messages from water."

osmosis filtration or distillation. The level of Sodium Fluoride can also be reduced through the process of water ionization. Reverse osmosis is a water filtration system that strips all mineral content, leaving lifeless water.

"Pure" H₂O water is not optimal healthy water. The word "pure" by itself means nothing. Pure water is H₂O and nothing else. Pure water is distilled water and can be used to top up car batteries etc., but it is not for drinking. It does not make us healthy. It replaces H₂O only but not the energy and minerals which were removed by distillation. Minerals are needed from water to rebuild the body on a daily basis. Fish cannot live in pure H₂O (distilled) water.

"Typical" tap water

There is not such a thing as typical tap water since the public water supplies come from all sorts of environments and are all different. In Australia, the pH readings of public water supplies can range from pH 5 to pH 8.5.

However, there is something typical with most municipal tap waters - they are polluted by man with chemicals which are not beneficial for long term health. These treatment chemicals are added for several reasons:

- To disinfect drinking water
- To neutralize acidity of water so it does not corrode the pipes
- To harden water so as not to dissolve lead contained in the solder of the fittings
- To avoid build up of "water waste" like calcium which one day eventually blocks the pipe
- To neutralize other chemicals used for some of the above.

Australian tap water is stored, controlled and delivered by municipal authorities. It has a variety of hazardous chemicals added to it, which, depending on geographical location, can include a mix of up to 50 different chemicals including:

- Lime (Calcium Hydroxide)
- Chlorine Compressed Liquefied Gas
- Sodium Fluoride
- Aluminum Sulfate Solution
- Soda Ash Solution
- Sodium Hydroxide dissolvable solid
- Aluminum Sulfate Polymer 1190
- Polymer 1115
- Polymer 1160X
- Sodium Hypo chlorite solution
- Sodium Silicofluoride

Fluoride

It must be understood that the element Fluorine is essential for the health of the human body. This element is stored in the spleen, eye structure and elastic tissue. It combines with calcium to form Calcium Fluoride, which is one of the twelve tissue salts found in the blood, as discovered by Dr. Schussler in Germany. Calcium Fluoride is a form of fluoride that is useful to the body and not Sodium Fluoride - the toxic waste by-product of the aluminium refining industry that is added to some municipal water supplies. In many countries, it is illegal to add Sodium Fluoride to water supplies.

Sodium Fluoride never occurs in Nature. The ingesting of excessive amounts of Sodium

Fluoride can cause many health problems. For example, recent research indicates that exposure to excessive amounts of this chemical during pregnancy can cause brain defects in the offspring.

"Sodium Fluoride can cause many health problems"

Chlorine

Chlorine is a well-known germicide. It is added to water to kill harmful water-borne bacteria before they kill us. Chlorine gas was used in the First World War to kill people. Chlorine upsets the electrical potential of the cell membranes. Chlorine is used to kill bacteria, however, chlorine does not kill viruses in water and it often contains carbon tetrachloride, a known carcinogen.

Chlorine did not kill the Cryptosporidium and Giardia virus outbreak in Sydney's water supply

in 1998 that shut down Australia's largest city's water supply for months.



Cryptosporidium is a parasite. Each tiny egg that finds its way into the human digestive tract produces more than a million replicas of itself during its four day life cycle.

Filtering water well below 3 micron will remove this parasite.

Chlorine has some unwanted side effects including:

- It smells unpleasant
- Some people are allergic to chlorine
- It drives the oxygen out of the water
- It decreases the pH value of water
- Fish can not live in chlorinated water

Chlorine is also known to cause the formation of undesirable chemical compounds in water such as toluene, xylene and styrene. To the cells of the body, they are deadly. They kill off red and white blood cells, destroy skin cells and produce serious heart problems. Showering in unfiltered chlorinated water should also be avoided for this reason as chlorine is absorbed through the pores of the skin, especially with hot water.

Chlorine has been linked for twenty years to colon, rectal, bladder and prostate cancers. Chlorine kills bacteria in water. When ingested, it also kills the friendly bacteria in the intestine and colon. Some people take dietary supplements such as acidophilus to stimulate the growth of friendly bacteria. Yet every time chlorinated tap water is consumed, it kills the good bacteria they have been so diligently trying to cultivate.

The fact that chlorine by itself decreases the pH to acidic levels in water brings some problems with it. Acidic water can be aggressive and corrode copper pipes and it can leach lead out of soldered pipe fittings. To counteract this reaction with water, chemicals like lime are added.

Even with a neutral pH of 7, chlorinated water can be quite corrosive. Therefore, alkaline chemicals are added to most municipal water supplies to increase the pH to 8 and even above. Filtered, ionized alkaline water has an optimal pH level without these added chemicals.

However, chlorine is to a certain degree beneficial in very small trace mineral amounts, as is the sodium chloride form, which is in salt and necessary to sustain life.

Alkaline ionized water for health

There has been recently within Australia a large marketing investment

in scare mongering about the consumption of ionized alkaline water. I feel that this is extremely irresponsible since ionized alkaline water is considered to be of significant health benefit in cases where the body has become unnaturally loaded with acidic waste substances. An acidic condition is very common in western society at around 90% of the adult population.

Acid build up has been recognized by some foresighted health care providers as being a major cause of premature aging and chronic diseases.

Detoxify with alkaline ionized water

Alkaline ionized water at pH 8.5 to 9.5 is the water that should be taken internally for proper hydration and detoxification. The more acid forming is the diet, the more alkaline water with its alkaline minerals is needed to neutralize and assist to eliminate the various acidic wastes.

“Healthy cells live in an alkaline body environment.

The human body works to maintain blood at a pH level of 7.35 to 7.45.”

Healthy cells live in an alkaline body environment. The human body works to maintain blood at an alkaline pH level of 7.35 to 7.45. To do that, it may have to dump accumulated acidic wastes which are then stored in other areas of the body. Not all wastes are eliminated naturally. These dumped wastes can later on lead to serious health problems.

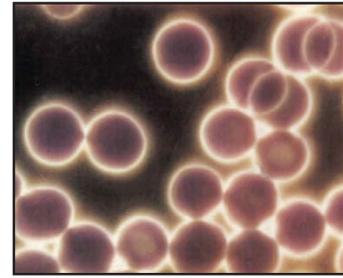
It should not be forgotten that certain parts of the body require, at times, to have an acidic environment such as for the breaking down of proteins in the stomach and for the assimilation of iron, calcium and vitamin C in parts of the small intestine.

Also, the body requires both acidic and alkaline minerals daily in the correct ratio and amounts. The required balance of minerals is often not possible with many common Western food intakes, hence the need to rectify the effects of this imbalance which is usually a build up of acidic wastes stored within the body.

Alkaline water and stomach acid

Natural fresh foods do not override the body's natural processes, unlike synthetic or man-made chemicals that do. Fresh natural foods are high in vital energy and are usually alkaline forming. The reduction-oxidation reactions that take place with natural products are always balanced, unless there is serious organ malfunction.

Healthy hydrated blood cells



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These are live blood cells of a man aged 51 and after only four months of drinking alkaline, ionized water. With its small cluster size this water is very easy to drink. It is absorbed into the cells rather than bypassing the cells. A clean hydrated internal environment resists disease naturally.

Unhealthy dehydrated blood cells



© Copyright BioNatural 2001

These are live blood cells of a 28 year old woman with health problems. When blood cells are dehydrated and then coagulate, it is difficult for cells to absorb water, nutrients and oxygen, and to expel acids and toxins. This sets up the internal environment for degenerative disease.

On the other hand, when ingesting unnatural or synthetically modified foods, drinks and substances that are absorbed by breathing or application to the skin, there is always an imbalance - a tail-end residue that is usually acidic and toxic to the body.

During digestion, the stomach acid is maintained at about pH 4 which is necessary for effective digestion and to control unfriendly bacteria.

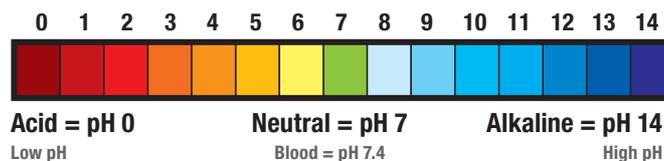
In between meals, when there is no digestion happening due to the absence of food, there is no need for an acidic stomach condition.

It has been noted that when alkaline foods and water are consumed with meals, the stomach's pH goes up and then a feedback mechanism is activated. This causes more hydrochloric acid to be secreted by the stomach, bringing the stomach acid level back to about pH 4.

Hydrochloric acid (HCl) is manufactured by the liver and is delivered to the stomach when digesting proteins. The function of HCl is to change the digestive enzyme precursor pepsinogen into its active pepsin form. The ability of the body to produce adequate amounts of HCl for digestion decreases with age.

Lack of HCl can give rise to such symptoms as heartburn, belching, bloating, flatulence and indigestion.

Per Hydrogen (pH) table Acid 0 - Alkaline 14



pH levels range from acid, pH 0 to alkaline, pH 14. The blood works to maintain a pH level of 7.35 to 7.45. Each unit below neutral 7 is ten times more acidic, so pH 6 is 10 times more acidic than pH 7 and pH 5 is 10 times more acidic than pH 6. Softdrinks can be pH 2.8 which is over 10,000 times more acidic than neutral pH.

In the short term, the health care provider may suggest a digestive support. For the longer term, it may be recommended to use a fully balanced natural mineral salt.

High levels of lactic acid may also arise. This is interpreted as high acidity and treated with pharmaceutical antacids. Whilst alleviating the immediate symptoms, the use of pharmaceutical antacids actually aggravates the problem in the long run. This is not a very good solution, especially now that there are safer and more natural alternatives available.

It is interesting to note that the body produces its own HCl from Sodium Chloride (NaCl), Potassium Chloride (KCl), Carbon Dioxide (CO2) and Water (H2O). The by-products of this reaction are Sodium Bicarbonate (NaHCO3) and Potassium Bicarbonate (KHCO3), which are alkaline buffers that go into the blood stream to neutralize excess acid!

Drinking active, energized, ionized alkaline water in between meals, but not closer than half an hour to a meal, will prove to be beneficial to most people. If you are not sure, then it would be wise to consult a competent natural physician. A good quality water ionizer has many easily adjustable levels for accurate pH control of drinking and cooking water for use with or preparing the many common acidic foods and drinks such as tomatoes, meat, tea and coffee, alcohol, rice, cereals and bread.



Life force with electricity

A primary cause of disease is when the body's life forces are depleted. When the life force generation ceases, then the body dies.

Those who engage in extremism and scare mongering will loudly tell you that using controlled low voltage direct current electricity to separate tap water into two parts, alkaline and acidic, is bad and that you should stay away from these things in favour of what they wish to promote and sell you.

Some advertising promotes a water filter by seeking to scare people about other products. This depicts electricity as a dangerous destroyer, calling it electrocution of water.

Perhaps this negative strategy takes the spotlight off its own products inadequacies in comparison to ionized alkaline water.

To produce the water that has the desirable qualities which enable a safe, effective removal

of unwanted toxins and progressive reinvigorating of the body, it is necessary and desirable to ionize municipal tap water and this requires electrical power.

"The ability of the body to produce adequate amounts of HCl for digestion decreases with age"

It should be understood that within the body there operates a safe, natural, very low voltage bioelectrical system that is the vital life force which expresses itself on the physical plane. The right amount of this energy can invigorate and heal the body; an excessive amount will cause a disruption of the existing structure.



Theodore Baroody - DC, ND, Ph. D Nutrition Author of the book "Alkalize or Die"

"The newest technology in drinking water today is electronically restructured alkaline water.

This water is produced through a special unit right at your own sink. It yields alkaline drinking water and has another facet that I find particularly interesting.

It lowers the millivoltage of the water. This means that the water molecule is reconfigured into a lighter, simpler form that is definitely more absorbable in the body. So not only are you getting a more alkaline product, but there is a Hertz frequency change that is beneficial.

The acid run-off water can be used to water your plants or as a disinfectant on the skin.

I have administered over 5000 gallons of this water for about every health situation imaginable. I feel that restructured alkaline water can benefit everyone.

After years of very positive continuous clinical experimentation with hundreds of clients using electronically restructured alkaline water, it is my opinion that this technology will change the way in which all health care providers and the public approach their health in the coming years.

Restructured water alkalizes by displacing acids and replacing with alkalines. The other health benefit of restructured water is the imparted frequencies which are not in distilled water. These frequencies assist in acid displacement toward the elimination channels.

My suggestion is to drink restructured alkaline water whenever possible."

and the cells would not be able to use osmosis to balance water pressure and absorb nutrients.

In fact, many vital body processes depend on the movement of ions across cell membranes. Recent research indicates that minerals may play a significant preventative role against a variety of degenerative diseases and processes. They may also prevent and reduce injury from environmental pollutants and enhance the ability to work and learn.

The physical universe is powered by energy and we may call it electricity since it is the energy field that exists around atomic structures. The body works by electricity and your thoughts are transmitted by electrical impulses. Every cell is activated by electrical impulses generated by the body chemistry. The heart beats because of its energizing by electrical energy. Similarly, electricity and energy vibrations that come from the sun can energize water. This does not make electricity "bad," but vital.

Every living thing is surrounded by an energy field that is composed of many layers of vibrational pattern and frequency. The innermost layer is what has been called "vital force" or "plasma". The goodness and vitality of an organism or a product of nature (i.e. fruit, vegetables etc.) depends on the harmony, strength and integrity of these subtle energy fields that

surround the gross physical substance. These energy fields can be photographed by a special camera and are seen as aural fields.

It is noted that fresh organically grown produce has a more powerful aural field than mass-produced crops that are grown using lifeless chemicals, harvested before being ripe and kept to deteriorate in storage for some time prior to sale.

Your body is dependent at every moment on its milli electrical currents for cellular communication and other vital functions, including heart beat.

Electrical currents are naturally occurring in living organisms.

Every second of every day the body relies on ionic minerals and trace minerals to generate and conduct billions of tiny electrical impulses. Without these impulses, not a single muscle, including your heart, would be able to function. Your brain would not function

"within the body there operates a safe, natural, very low voltage bioelectrical system that is the vital life force"

before being ripe and kept to deteriorate in storage for some time prior to sale.

Antioxidant Potential or ORP (Oxidation Reduction Potential)

Redox is an abbreviation for the chemical action like rust attacking metal. A negative Redox Potential reading for foods is interpreted as indicating the presence of a substantial vital force, whilst positive readings indicate weaker energy fields or depletion of a vital force.

We compared freshly produced organic wheat grass juice, organic coconut milk, organic carrot juice, human breast milk and human sperm. They were all measured to have a negative Redox Potential (measured in millivolts). The more negative (or minus) the reading, the more beneficial and the stronger the antioxidant.

When juices extracted from conventionally mass-produced supermarket fruits and vegetables were tested, it was found that their Redox Potential was the opposite, positive and oxidizing.

Over 15 years ago, a leading world authority on natural healing, Dr Patrick Flanagan, measured the Hunza water in the Himalayas where the average age of the inhabitants is well over 100 years and without degenerative disease. He found their drinking water to be alkaline with a negative Redox Potential.

Misconception of the facts

Some contradicting sources preach that *“some of the worlds healthiest peoples, with the lowest incidences of cancer, were in fact drinking water that was pH neutral to slightly acidic,”* where in fact researchers found that the Hunza water, partial glacial water run-off, has a high alkaline pH and an extraordinary amount of

active hydrogen (hydrogen atom with an extra electron). These active hydrogen atoms are powerful free radical scavengers. Some researchers believe that the Hunza's ability for longevity, living to over 100 years of age, may be derived from the high pH water they drink due to it's high mineral content.

“minerals may play a significant role against a variety of degenerative diseases and processes”

In 1953, Professor Kemeny, Co-Vice Chancellor of Biomathematics at the Polytechnic Institute in Budapest, Hungary, correlated specific properties of water and the internal environment of the body by the following parameters:

Oxidation-reduction potential, Conductivity, and pH.

In efforts to recreate the Hunza water, Japanese scientists investigated Russian electrolysis technology. This “functional water” technology was first developed in Japan in the early 1950's and approved for medical therapeutics in Japan by the Ministry of Health and Rehabilitation in January 1966. *Source: Dr. Ralph E. Holsworth, Jr., D.O., a licenced medical physian.*

These findings prove that alkaline water with good levels of negative ORP is better to drink than neutral or slightly acidic water.

“The key to active and natural health is energy levels.”

We find that there is a principle that a positively charged environment will snatch your vitality whilst a negatively charged environment will provide you with vitality.

Examples of environments that are positively charged are stuffy, poorly ventilated rooms and air conditioned buildings with synthetic light and synthetic building materials. This includes synthetic floor coverings, blinds and furniture found in most offices, shopping centres and some homes with an abundance of plastics and chemicals, and in vehicles including aircraft. The problems are compounded by wearing synthetic fabrics, shoes and sleeping with synthetic fabric sheets, mattresses and blankets. That's why you feel fatigued after being confined in these artificial environments.

Examples of beneficial negatively charged environments are by a waterfall, the seaside and in the forest or bush. That's why people can feel so invigorated by such places and can instinctively seek to holiday and recharge in their vicinity as a healthy escape from artificial, positively charged environments.

Water can be treated by electrolysis, the ionization process, to improve its negative Redox Potential. This has been shown to provide a safe source of readily-available free electrons that in turn will assist to block the damaging oxidation of tissue caused by free radical molecules.

This revitalized water can be of great benefit to many people, especially those that have an acidic system as a result of defective diet, stress or living in an acidic environment, or those persons afflicted

by chronic degenerative disease that conventional, drug-based medical conditioning has no lasting answer for.

If you want to feel alive, eat live foods and drink live water

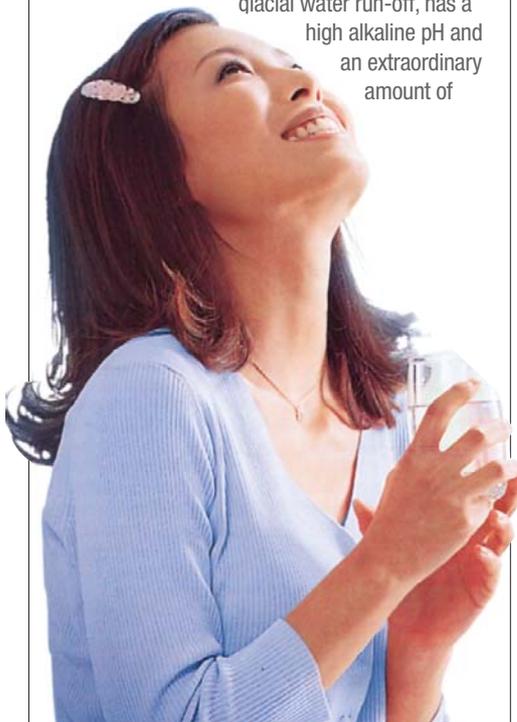
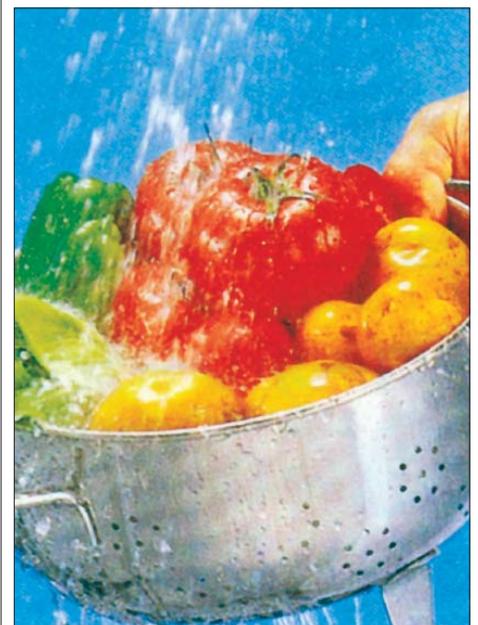
A key natural function of the body is its electrical conductivity in every cell in the body. It is how the brain communicates with the cells, sending electrical signals to perform a multitude of normal functions. Without this measurable and irreplaceable electrical energy, life is pronounced extinct.

The key to active natural health and wellbeing is energy levels. When the body is fatigued, suffers from circulation problems, aches and pains and is overweight, the mind becomes depressed and the body's energy levels are minimized. The life force you were given decreases.

You are what you eat and drink. To feel alive, put live foods and water into your system. To feel dead, put dead foods and water into your system. This is simply a matter of choice.

The live energy (or lack of it) in various foods and waters is measured in megahertz (MHz). Megahertz is a measurement for the frequency of the electrical charge around a substance.

Food Item	Average energy
Canned foods	0 MHz
Chocolate cake	2 MHz
Kentucky chicken	3 MHz
Big Mac	5 MHz
Synthetic vitamin and mineral supplements	20 MHz
Ionized water	60 MHz
Fresh fruit	67 MHz
Green vegetables	80 MHz



Laboratory comparison test of tap water and ionized water

Consuming foods and drinks low in electrical energy frequency does not provide the body with the vital energy it needs to function. However, this dead food and dead water intake must still be processed so the body expends its precious electrical energy in the digestion, processing and elimination of low-grade nutrients.

Such food and drinks are referred to as lifeless as they rob the body of life-giving energy. If eating lifeless food and drinks becomes the daily habit, the body and mind become fatigued and the downhill slide towards degenerative disease begins.

Fresh foods naturally deteriorate over a short time and progressively lose their electrical or vital energy. Man-made food and drink processing ensures loss of energy. Fresh and raw is best for food energy levels. Of equal importance for energy levels, drink freshly ionized, energized water from a water ionizer daily.

Add to your energy

Based on a healthy body's requirement for electrical energy, a life-generating diet should consist of fresh foods and water that have an energy frequency of at least 60-80 megahertz (MHz).

Body tissue	Average energy
Tumour	30 MHz
Liver	57 MHz
Colon	60 MHz
Stomach	61 MHz
Lung	65 MHz
Top of head	65 MHz
Feet	65 MHz
Heart	67 MHz
Blood	73 MHz
Brain	75 MHz

The electrical energy surrounding vital organs and body parts has been scientifically measured. In this table above, diseased body tissue is shown to measure lower electrical energy than healthy body tissue.

Fresh antioxidant ionized water with its natural negative ion charge has a MHz of around 60 to enhance the body's daily need for energy.

Comparing contaminants and nutrients of tap and ionized water

Right: These laboratory tests were conducted by the Korea Environment and Water Works Institute on Sep. 24 - Oct. 14 2002 for the purpose of reference only. Testing method: Korea Water Quality Pollution Standard Test Method. Testing condition: After 20 litres of tap water were treated by the AlkaLife water ionizer, under 1kgf/cm³ of water pressure and pH neutral in the test sample, the treated water sampled was analyzed.

Items	Tap water standard concentration	Tap water after ionization
Total Colony Counts	Below 100 CFU/mL	Not detected
Total Coliforms	Not detected -/100mL	Not detected
E.coli	Not detected -/100mL	Not detected
Pb - Lead	Below 0.05 mg/L	Not detected
F - Iron	Below 1.5 mg/L	Not detected
As - Arsenic	Below 0.05 mg/L	Not detected
Se - Selenium	Below 0.01 mg/L	Not detected
Hg - Mercury	Below 0.001 mg/L	Not detected
CN - Cyanide	Below 0.01 mg/L	Not detected
Cr ⁶⁺ - Chromium Iron	Below 0.05 mg/L	Not detected
NH ₃ -N - Ammonia	Below 0.5 mg/L	Not detected
NO ₃ -N - Nitrate	Below 10 mg/L	1.4 mg/L
Cd - Cadmium	Below 0.005 mg/L	Not detected
B - Boron	Below 0.3 mg/L	Not detected
Phenol	Below 0.005 mg/L	Not detected
Diazinon	Below 0.02 mg/L	Not detected
Parathion	Below 0.06 mg/L	Not detected
Fenitrothion	Below 0.04 mg/L	Not detected
Carbaryl	Below 0.07 mg/L	Not detected
1.1.1-Trichloroethane	Below 0.1 mg/L	Not detected
PCE Poly Chlorine Ethelyne	Below 0.01 mg/L	Not detected
TCE Tetra Chlorine Ethelyne	Below 0.03 mg/L	Not detected
Dichloromethane	Below 0.02 mg/L	Not detected
Benzene	Below 0.01 mg/L	Not detected
Toluene	Below 0.7 mg/L	Not detected
Ethyl benzene	Below 0.3 mg/L	Not detected
Xylene	Below 0.5 mg/L	Not detected
1.1-Dichloroethylene	Below 0.03 mg/L	Not detected
Carbon tetrachloride	Below 0.002 mg/L	Not detected
1,2-Dibromo-3-chlopropane	Below 0.003 mg/L	Not detected
Free residual chlorine	Below 4.0 mg/L	Not detected
THMs Tetra Halogen	Below 0.1 mg/L	Not detected
Chloroform	Below 0.08 mg/L	Not detected
Hardness	Below 300 mg/L	71 mg/L
Consumption of KMnO ₄	Below 10 mg/L	1.6 mg/L
Odour	Odourless	Odourless
Taste	Tasteless	Tasteless
Cu Copper	Below 1 mg/L	Not detected
Colour	Below 5 degree	Not detected
ABS	Below 0.5 mg/L	Not detected
pH	5.8 - 8.5	8.3
Zn - Zinc	Below 1.0 mg/L	Not detected
Cl - Chlorine ion	Below 250 mg/L	14 mg/L
Total solids	Below 500 mg/L	108 mg/L
Fe - Iron	Below 0.3 mg/L	Not detected
Mn Manganese	Below 0.3 mg/L	Not detected
Turbidity	Below 0.5 NTU	0.14 NTU
SO ₄ ²⁻ - Sulphate	Below 200 mg/L	18 mg/L
Al Aluminium	Below 0.2 mg/L	Not detected

BioAlkalizer facts

BioAlkalizer water ionizers have a built-in transformer that converts 240 volt Australian power down to 48 volts at two watts per minute. This lower voltage is enough to gently restructure lifeless tap water into energized, snowflake-structured water through its genuine ionizing



Testing water samples

The following tests were conducted in a reputable scientific laboratory in Melbourne. These results are published to compare how ionized water compares to a volcanic rock filter. The test results clearly suggest that the volcanic rock filter does not change the source water properties to any degree of significance.

Analysis of Water Samples Report No: N94860

BY EML (CHEM) PTY. LTD. NATA registered no.2731

	Tap water	Level 2 Alkaline Water*	Level 2 Acidic Water*	Volcanic Rock filter
pH	7.1	9.5	4.2	7.3
Redox Potential (mV)	+374	-102	+362	+352
Calcium ppm	3.0	4.3	1.9	3.1
Magnesium ppm	1.1	1.2	0.6	1.3
Sodium ppm	4.0	4.8	2.3	4.1
Potassium ppm	0.7	0.8	0.3	0.7

* Comment: Ionization causes more of the alkaline minerals to be concentrated into the alkaline side of water whilst it reduces their presence in the acidic side.

	IonFarm 5000 water ionizer Change compared to tap water	Volcanic rock filter Change compared to tap water
pH	34% increase	3% increase
Calcium	43% increase	3% increase
Magnesium	9% increase	18% increase
Sodium	20% increase	2.5% increase
Potassium	14% increase	Nil
Total alkalinity	100% increase	29% increase
Electrical conductivity	24% increase	2% increase
ORP	127% decrease	6% decrease

Comparison of analysis of ionized alkaline water (level 2) drinking water and volcanic rock filter drinking water using the same source tap water on the same day.

Water testing using a Bio-impedance machine

Comparing tap water, ionized water, volcanic rock filter water and distilled water

	pH	Redox (mV)	Resistivity*
Tap water	6.41	+164	18010
Ionized alkaline water	9.73	-294	4550
Tap water after filtration (volcanic rock filter)	6.49	+175	4785
Distilled water	5.85	+131	107194

* Comment: The measure of Resistivity is inversely proportional to the relative concentration of minerals in such a way that when mineral concentration increases, Resistivity decreases. Hence, distilled water has a very high Resistivity since it has extremely low to nil minerals in it. Note the major variances between the ionized alkaline water and the volcanic rock filter.

process. This process also increases the alkaline mineral concentration in the drinking water compared to tap, bottled and filtered water.

Ionizing splits tap water by electrolysis into negatively charged alkaline BioWater (approx. 70%) and positively charged acidic water (approx. 30%) which is for antibacterial external use including washing food and treating many skin conditions. The ionizing process can be reversed with 70% acidic water and 30% alkaline water simply by pressing a button.

The transformer in the ionizer adjusts its energy levels according to the alkaline selection; using level 1 for drinking water. To counter food acidity, cook with level 2 for rice, pasta and noodles, level 3 for beverages, or level 4 for lengthier cooking with meat casseroles and stews.

Added Okinawan Coral Calcium

Calcium is the biggest mineral by volume in the body being more than all other minerals combined. Calcium deficiency is related to around 150 degenerative diseases. This vital alkaline mineral needs magnesium in the correct ratio to be absorbed and effective, otherwise it is largely excreted. In Okinawa, Japan, for the past 500 years the island inhabitants have been consuming broken off pieces of their coral reef that is largely calcium with the perfect magnesium ratio. Okinawans live to an average age of 105 years without degenerative disease. The average age for the rest of Japan is 77 years.

The BioAlkalizer has Okinawan coral calcium granules added. These minerals are delivered into the units water and are easily consumed daily with no more effort than drinking water. An independent laboratory test measured calcium from the water ionizer at 43% more than that available in tap water (see table left).

Filtration facts

The replaceable BioAlkalizer carbon-activated internal filter finely filters waters down to 0.1 micron to block heavy metals, viruses, solids, contaminants and bacteria including Cryptosporidium. This very fine micron size is below virus level. Depending on litres filtered and source water quality, this long-life filter cartridge should last from around 6 to 12 months. Consumers should never let any filter be in use for longer than 12 months without replacement to safely control bacteria levels. Optional pre-filters to 5 micron extend the use of the ionizers fine internal filter.

Back flushing filter deficiencies

Many water filter experts from large and reputable companies recommend that due to accumulated bacterial build up, all drinking water filters must be replaced within a 12 month period. When a filter has done its job of blocking contaminants, replace it with a clean filter. Back flushing a filter for cleaning purposes will last for a small period of time. Be wary of claims that a volcanic rock filter does not require filter replacement for 20 years as

this could be extremely detrimental to long-term health due to bacterial growth that is not removed or sterilized by hot water. Reusing a filter is false economy at the potential expense of your health and defeats the purpose of filtration. **Always find out the micron level of filters before buying.**

Ionized water scavenges Free Radicals, protecting and minimizing human DNA damage

Free radicals cause extensive damage to biological macromolecules, which results in a variety of diseases as well as aging. Ionized water recently was analyzed using single cell gel electrophoresis (a.k.a., Comet assay) and it was found to not only prevent DNA damage of human cells (i.e., lymphocytes) but also to enhance the ability of the DNA to repair "oxidative damage." The Comet assay simulates the conditions that human cells endure in our bodies in daily living. In short, ionized water is a very important antioxidant.

Human cells (lymphocytes) were incubated and then bathed in ionized water for five minutes. The cells then were exposed to hydrogen peroxide used to create free radicals or reactive oxygen species similar to the concentrations created in the body by smoking cigarettes, toxic chemicals or radiation. The DNA was tagged with a fluorescent dye and gently pulled apart in a gel solution by a direct current and gravity. Oxidized DNA (biological "rusting") breaks and forms a comet-like image of the broken bits and pieces of DNA. A comet with a long tail demonstrates a large degree of DNA damage.

The human DNA bathed in ionized water had no tails, indicating slight to no DNA damage. Identical cells without ionized water bathing formed large comets with long tails or large amounts of DNA damage. The same DNA bathed in ionized water was rechecked later and the DNA had completely repaired itself.

Ionized water, analyzed in vivo using single-cell gel electrophoresis;

- Minimizes damage to human DNA
- Prevents damage to human DNA
- Is an ANTIOXIDANT

Reference: Wood, K.A., Boon, C., Warner, A., *The Comet Assay™ for Investigating Anti-oxidant Properties of Essential Water*, Trevigen Report, December 15, 2000.

Source: News Article, March 23, 2001

Accurately measuring water properties

Refer to Health Practitioners definitions Appendix A (page 10) supplied by the Nutritional Institute of Australia. www.nioa.com.au. Hydrogen Ion Concentration (pH), Reduction-Oxidation Potential (Redox Potential) and Nuclear Magnetic Resonance (NMR) are three technological tools which can be used to accurately assess water properties. It would be simplistic to say that

one method is better than the other two since they are three different approaches. NMR is a relatively recent development. It is the most expensive and sophisticated method but this does not over-rule the value of the pH or Redox Potential (ORP) measurements.

In a nutshell, pH measures the quantity of H+ protons and OH- ions, so it is an indicator of acidity (positive hydrogen ions) and alkalinity (negative hydroxide ions). However, beside those two ions, there are other molecules and even single atomic particles that can either donate or snatch negative charges (electrons) that will influence the effects of these other particles. Therefore, it has been suggested that Redox Potential is a more useful parameter than pH.

It must be noted that these ions do not generally exist in isolation but are grouped in molecular clusters. For example, the H+ ion bonds to a water molecule forming H3O+ ion, which is in acidic water.

Redox Potential, measured in millivolts (mV), is a measure of the potential of that solution to either donate or snatch electrons. If the solution in question has a positive reading, then it will generally have a damaging oxidizing effect; if the reading measures negative, it will act as a beneficial reducing agent (antioxidant), an electron donor. Whether the oxidizing or reducing reaction takes place depends on the substance that the above solution comes in contact with.

To further clarify this important point: suppose we have a water solution which has a redox potential of -350mV (minus 350 millivolts) and it is drunk in an alkaline environment where there is already an abundance of negative charges, then nothing much will happen in the body. On the other hand, if the above reducing solution of -350 mV comes in contact with a highly acidic medium, then there will be a reaction - an exchange of electrons, which is what constitutes a chemical reaction. This is what alkaline ionized water from a water ionizer is designed to do when consumed by people with acidic buildup.

To actually measure what has taken place and the consequent changes in molecular structure, one may correctly state that NMR is the tool that we should use to measure the effect of such a reaction. However, this does not preclude the usefulness and significance of Redox Potential and pH measurements. If the substance has little potential, then little activity will result; if the substance (water) has a positive mV reading, it cannot be expected to neutralize an acidic environment.

It is known that stomach acidity is essential for digesting proteins. This is why alkaline water is not drunk at meal times.



pH meter ORP meter



Comparing waters - conclusion

The goodness of water can be appraised directly or indirectly by the use of the three aforementioned technologies to measure its physical properties. But is this a complete and accurate picture of the measure of all the goodness achieved by the water ionization systems?

How can the state of water's "goodness" be determined?

1. We can run tests to measure the presence of contaminating agents, such as virus, bacteria, undesirable and dangerous chemicals and waste products.
2. We can measure the water's hydrogen concentration (pH) to determine the level of H+ ions and OH- ions by using a pH meter or special test strips which indicate the level of acidity or alkalinity of the water being investigated.
3. We can measure the ability of the water to either donate or accept electrons by measuring its Oxidation-Reduction Potential in Millivolts (mV) by using specially designed ORP meters. These meters are widely accepted around the world as scientific measuring instruments.

4. Nuclear Magnetic Resonance (NMR) was developed in the fifties as a tool to investigate cellular pathology and may also be employed to measure molecular cluster size and the pH inside cells. The South Korean manufacturer of the BioAlkalizer water ionizer has recorded the following NMR measurements for the sizes of various water clusters. Hertz (Hz) measures cluster size. Lower Hz indicates less resistance of water into cells, therefore increased absorption.

ionized alkaline water	53Hz
(5-6 H2O molecule cluster size, regular shape)	
Naturally occurring Spa water	80 Hz
Village water (human longevity)	80 Hz
Mineral ground water	94 Hz
City water	120Hz
(10-13 H2O molecule cluster size, irregular shape)	

5. Measuring the frequency of the electrical charge around a substance in megahertz (MHz) is considered to be an indicator of vitality. Fresh organic produce and freshly ionized water has been found to exhibit a high level of vital energy whilst processed food and ordinary tap water have been found to have a low electrical charge and low frequency.

6. We can freeze water and observe its crystalline structure since this structure may reflect the level of harmony and goodness carried by that water. In his internationally translated book "Messages from Water," Dr. Masaru Emoto gives convincing evidence on how the natural six-sided crystal structure of water is physically influenced by contaminants, sounds, and amazingly, even the energy of thoughts and words. Bear in mind that adults are 70% water by volume and are affected by the same influences.

Research, references and appendices

The following reports of university tests, clinical trials and animal productivity results show that the ingestion of alkaline ionized water, sometimes called reduced water, is safe, reduces acidity, acts as an antioxidant, yet is a good supplier of oxygen and it leads to an overall healthier life.

1. Clinical evaluation of alkaline ionized water for abdominal complaints.

Placebo controlled double blind tests at Shiga University of Medical Science and National Okura Hospital, Japan. Conclusion: "From the test involving 163 subjects, alkaline water (pH 9.5 with calcium at 30ppm) was more effective than clean water against chronic diarrhoea and abdominal complaints (dyspepsia). Also the safety of alkaline ionized water was confirmed."

2. Large-scale animal trials have been undertaken in Japan and Korea involving the use of alkaline ionized reduced water especially with egg-laying hens and on dairy farms. Egg-laying hens drinking alkaline ionized water showed increased egg-laying rate, retarded sebaceous (fat) constitution and improved chicken meat quality.

3. Summary of the benefits arising from the use of alkaline ionized water on 27 Japanese dairy farms

Preamble: With the advent of electrolyzed water treatment in the Japanese marketplace, electrolyzed alkaline water was introduced into the dairy farms. Knowing the positive health benefits and results that were acquired through human consumption, alkaline water was used in place of tap water as the sole source of water for dairy cows. A summary of the results of this water usage is reported below.

The information was obtained from 27 dairy farms along with reports from a group of veterinarians. In the full website summary, the farm for each report is identified. The general benefits recorded were:

- An increase in milk output by 18%- 28%
- A notable improvement in the quality of milk
- Elimination of strong faeces and urine odours
- Strengthening of the legs - Japanese cows are indoors for long periods
- Increased appetite

As well as the farmer observations above, the following views were given by the veterinarians:

- Noticeably increased appetite; no new supplements were added to diets
- Well-digested foods and improved liver condition
- A healthy sheen on the cow's coat
- Higher fertility rate and higher pregnancy rate
- Minimizing of sicknesses - tremendously improved health condition
- No adverse conditions noted with the consumption of alkaline ionized water.

4. "Miracle Water" - a 13 part Japanese television documentary series, 1996, about the benefits of ionized water screened on NHK TV. The series mainly considered the sterilization

use of electrolytically produced oxidized acidic water. One part, segment 4, considered drinking of alkaline ionized water by a diabetic patient at the Kojima Hospital in Kobe under the supervision of Dr Hidemitsu Hayashi (Director of the Tokyo Water Institute), who said in the interview, "The resolved water (alkaline ionized water) extinguishes free radical active oxygen. This "miracle" water being taken internally is at pH8 and its Resolved Potential (ORP) is minus 238 millivolts."

5. "Artificial Organs" vol.21 (1) p.2—4. 1997. I.S.A.O. Blackwell Science Inc. Boston.

"An electrolyzed basic aqueous solution has a reducing potential which leads to a reduction of activity of free radicals in the body and it may contribute to prevention and/or treatment of various diseases such as diabetes mellitus, stomach ulcer, cancer and so on."

6. "Physiological effects of alkaline ionized water: Effects on metabolites produced by intestinal fermentation." Japan-Gifu University Study published in 2000.

"Based on results, we made a judgment that the effect of taking alkaline ionized water supports part of the inhibition mechanism against abnormal intestinal fermentation. On the other hand, under the dietary condition of low intestinal fermentation, alkaline ionized water uptake does not seem to inhibit fermentation. That leads us to believe that the effect of alkaline ionized water is characteristic of hyper fermentation state. Bacteria count in the intestine does not have significant difference" (compared to control).

7. A major USA scientific study, possibly the first American evaluation on the effects of alkaline ionized water under the title "The effect of electrolytic water intake on lifespan of auto-immune disease prone mice." Research undertaken at the Texas University, USA was reported on the Watershed website, 2001.

The testing procedures of this research on 150 mice involved the following:

- Life long intake of both reduced (pH 9.0) and hyper-reduced (pH 10.0) water caused no harm to mice compared to tap water.
- Survival is increased significantly by hyper-reduced water in one strain with a slight increase in the second strain.
- Reduced and hyper reduced water appeared to increase T-cell numbers and decrease B-cells.
- Both reduced and hyper-reduced water appear to increase antioxidant in RNA levels.

8. "Anti-oxidant Water Improves Diabetes".

The brief extract from the published findings of ten Japanese researchers, published by Kluwer Academic Publishers 2001, under the heading Animal Cell Technology from Target to Market. Electrolyzed Reduced Water (ERW) produced near the cathode during electrolysis of water scavenged reactive oxygen species (ROS) and protected DNA from oxidative damage in vitro... ERW stimulated glucose uptake in rat L6 myotubes, also stimulates insulin secretion from beta cells of pancreas. Also improved the symptoms of human diabetes.

ERW produced from tap water scavenged 25% of intracellular ROS, whereas commercial mineral water created more oxidation." pp.574, 576.

9. "Protective mechanism of reduced water against alloxan-induced pancreatic B-cell damage – scavenging effect against reactive oxygen." "Cytotechnology Journal" vol.40 p.139 - 149, Oct.2002. A joint effort of 17 researchers.

"Reactive Oxygen Species (ROS) can cause irreversible damage to biological macromolecules, resulting in many diseases ... Tashiro reported in 1999 that double blind clinical tests demonstrate that ERW (electrolyzed-reduced water or ionized water) was safe and effective for intestinal abnormal fermentation, acid indigestion, chronic diarrhoea, chronic constipation, dyspepsia and anti acid. ERW contains a lot of hydrogen, scavenges ROS and protects DNA from oxidative damage, suggesting that stable active hydrogen in ERW might be a reducing agent responsible for scavenging against ROS."

10. Reduced Water for Prevention of Diseases

by Sanetaka Shirahata et al. Published in Animal Cell Technology; Basic & Applied Aspects vol.12, p25-30. Concluding perspective; "Electrolysis Reduced Water also protected brain cells from oxidative damage, suggesting that it may be effective for various brain diseases. There are many clinical instances that many diseases caused by Reactive Oxygen Species including diabetes mellitus, cancer, arteriosclerosis, atopic diseases, Parkinson's disease and even pigmentary degeneration of retina were improved by daily intake of reduced water. Further intensive investigation will be necessary on the functions of reduced water for health." This follows an extensive review of considerable research work undertaken at Genetic Resource units at several Japanese Universities.



Summary

The use of alkaline ionized water has merit in that it can help to alleviate and balance the acidic condition of the intracellular fluid that is a harmful health condition prevalent in western society.

The misinformation about water ionizers intended to scare people away from considering ionized alkaline water in favour of a volcanic rock filter is found to be faulty, inaccurate and lacking substance.

It can be clearly seen that there is a reasonable position set forth in the proceeding pages for a very valid case regarding the use of ionized alkaline antioxidant water for improving body acid/alkaline balance where there are excessive acidic wastes accumulated.

This case is also supported by many satisfied water ionizer customers who have done their homework, among whom is the author of the book

"Reverse Aging" by Sang Whang. Sang Whang, an American Korean, is an engineer, scientist and inventor with many US patents. His fields of expertise span many different areas such as data communication devices (modems), electronic filters, chemistry, water, cornea measuring devices, multi-focal soft contact lens, etc.

After a personal experience with the benefits of using alkaline ionized water, Sang Whang commenced a more in-depth study, coming from a practical results orientated background. His book supplies an extensive set of valid reasons for investing in an appropriate water ionizer.

We hope this information answers some of your questions in relation to water. Should you have further queries on quality ionization or drinking water systems, please contact Colin Michael at BioNatural, toll free phone on 1300 555 686.

The final decision is up to the individual. Please do your research and don't be misled from the truthful facts. Millions of people are enjoying the health and longevity benefits of ionized alkaline water.

Appendix A - Definitions in relation to water and body fluids

pH: Whether a substance is considered alkaline or acidic is determined by its pH (potential of hydrogen). pH is the measurement of the hydrogen ion concentration and is expressed in terms of a logarithmic expression. pH is quantified in a scale that ranges from 0 (which represents a complete saturation of hydrogen ions) to 14 (which represents a complete void of hydrogen ions).

A pH measurement which falls between 0 and 6.99 is considered acidic while a pH measurement from 7.01 to 14 is considered to be alkaline. A pH reading of exactly 7.00 represents the middle point and is considered to be neither acid nor alkaline. As the pH of a sample increases, the hydrogen ion concentration decreases. Conversely, as the pH of a sample decreases, the hydrogen ion concentration increases.

An accurate and precise measurement of the bodily fluids' pH is essential to understanding and then creating optimal health. The fact that hormone receptor sites, enzyme kinetics and mitochondrial function are all pH dependant, sheds a light of importance on comprehending the relative value of pH, while also providing effective means to controlling its variance.

rH2: rH2 is a measurement of oxygen-reduction potential under a specific pH measurement. It indicates the amount of electron potential that exist in a tested solution.

The rH2 scale ranges from 0 – 42, where 28 represents the mid point where the relative concentration of electron donors is approximately equivalent to the relative concentration of electron acceptors. Any rH2 value noted below 28 is considered to be **reduced** and contains a greater number of electron donors than electron acceptors. Conversely, if the value is greater

than 28 the fluid is considered to be **oxidized**. Oxidized fluid has a lower number of electron donors than electron acceptors.

A high number of available electrons in the cells and more specifically in the mitochondria is a highly desirable condition. The electrons are produced as a result of an active and productive Krebs Cycle. The electrons are carried in high-energy biochemical intermediates. These intermediates are converted to usable energy (ATP, GTP) through the electron transport, oxidative phosphorylation mechanism.

r: r is a measurement of resistivity in ohms. This reading is synonymous with the relative concentration of electrically conductive ions in solution. When biological fluids are being tested, r is an excellent indicator of relative mineral concentrations. r is inversely proportional to this relative concentration of minerals in such a way as when mineral concentration increases, r decreases. Conversely, when mineral concentration decreases, the r-value increases.

When the r-value is elevated, it may indicate a lack of adequate and normal mineral concentration. This condition can often be caused by malabsorption, which restricts the minerals from being properly absorbed and transported into the blood.

Hydration Index: The hydration Index is a quantitative value that can aid in the determination of the relative state of patient/client dehydration. Research has proven that as we age or experience degenerative conditions, the relative levels of available water to and in our cells are diminished.

By utilizing this new assessment index, insights into the severity of this condition can be illuminated. Obviously, increasing biologically pure water must be the first step in restoring this value to optimal ranges. However, evaluating and then treating the kidneys as well as the relative mineral supply should also be considered.

Detoxification Ability: While removing toxic waste from the body should always be considered in the very first line of therapy, it must be noted that not everybody detoxifies equally. A certain amount of base cellular energy is necessary in order to facilitate the removal of waste products. **If the underlying source of energy is not sufficient to allow for active transport and removal of waste products, then detoxification will not occur.**

By monitoring the detoxification ability information, a broad-spectrum assessment of these capacities can be realized. **The resistivity values as well as the redox levels determine the detoxification ability factor.**

Digestive Stress Factor: Many distinguished authorities have held onto the paradigm that the beginning of all disease states begins in the digestive system. **If the digestive system is functioning properly, then food products are effortlessly broken down to bio-available energy to run the many formal aspects of metabolism.** If, however, the digestive system is distressed, then every subsequent metabolic

process will also be compromised. The scientific data suggests the degree of digestive stress is found in pH and redox information.

Mitochondrial Activity Level: All life is dependant upon the ability to produce useful energy packets that can be converted into functional metabolic pathways. In the human cell, the organelle that is responsible for this crucial conversion of electrons into energy (ATP) is the mitochondria. If the mitochondria do not adequately produce life-giving energy, then the system will deteriorate and eventually die.

Maintaining optimal mitochondrial function and energy production is essential. Additionally, to insure that the mitochondria is functioning properly, there must exist a delicate balance between free radical production and elimination. If no oxidative stress is found in the mitochondria, then it has lost its ability to protect itself against xenobiotic toxicity. If, however, too great a degree of oxidative stress occurs, then the permanent damage to mitochondrial sensitive DNA might occur. The mitochondrial activity level indicators, which are based on the degree of oxidative stress found within the fluids, might be a valuable means of monitoring this intercellular structure.

Organic Buffer Capacity: The quality and capacity of the body's many buffer systems are essential to regulating pH sensitive metabolic processes. For instance, all enzymes that function within the body are dependant upon a specific pH range to function properly. If the pH varies outside of this defined range, the enzyme will not function.

The body has a very limited and exhaustive supply of buffers. If this is depleted, the pH values of the critical tissue will not remain stable. It is therefore essential that the buffer capacity never be drained and that there always remains a reserved amount to maintain adequate pH balance. If the body has an excellent ability to help compensate a significant alteration in pH then the overall buffering capacity of the system is excellent. If however the body has lost its ability to compensate for a pH shift, then increasing organic salts and supporting the buffering capabilities of the body becomes crucial.

Biological Age: Biological age is a mathematical calculation based strictly and solely on the levels of oxidative stress. There is a direct relationship between an increase in oxidative stress and an increase in the biological age factor. The converse is also true, a decrease in oxidative stress will cause a decrease in the biological age factor.

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