H_2O dot *con*

Water-related pseudoscience, scams, and quackery

Magnetized water: pseudoscientific snake oil

Junk Science in the Marketplace

To a chemist, "magnetized water" is laughable nonsense, but to any number of Web-based hucksters, it is a bonanza— a wonderful opportunity to extract revenue from the notoriously science-challenged "alternative health" crowd. Even those who might have a high-school chemistry course in their past are liable to be taken in by some of the misleading hype and outright lies found on most of these quackery sites.

These nostrums are supposed to work all kinds of wonders from tuning up your immune system to raising your "energy levels", introducing anti-oxidants and slowing the ageing process. Many of the claims are identical with those made by hucksters of similarly worthless products such as ionized water and "clustered" waters. — and given the strong influence of mind on body (the placebo effect), it sometimes appears to work- for a while, at least!

A substance is *magnetized* when its constituent molecules or structural elements can be aligned in a definite direction by the influence of an external magnetic field. In a liquid or in a gas, this can only happen to molecules that possess an odd number of electrons. Water, H_2O, contains 10 electrons, so it is not attracted to or oriented by a magnet. In fact water, like most molecules, is *diamagnetic*; it is actually *repelled* by a magnet, although so weakly that sensitive instruments are needed to observe this effect.

And contrary to what you may read on these hawker sites, the properties of water (surface tension, density, internal structure, chemical or biological behavior) are *not* measurably altered by treatment with a magnet.

An elementary tutorial on magnetism

A more comprehensive tutorial from WikiPedia

Of course, someone who is mainly after your money will try to convey the false impression that a substance is magnetized by the simple act of putting a magnet near it. This can be true for *ferromagnetic* substances such as iron, but definitely not for water! This fact does not prevent the diffusion of garbage such as

"Researchers found when a permanent magnet is kept in contact with water for a considerable time; the water gets magnetically charged and acquires magnetic properties. Such magnetized water has its effect even on the human body when taken internally and regularly for a considerable period. " [link]

(One wonders how people who have not mastered the rudiments of sentence structure can be competent to reveal the mysteries of magnetism!) This same site lists some "reported health benefits" of magnetized water; who "reported" them is not stated, but you can be sure these are not in the reputable scientific literature:

- helps to regulate the movement of the bowels expelling all accumulations of poisonous matter
- The use of magnetic water in urinary and kidney disorders has been documented.
- Magnetized water is also very beneficial for nervous disorders and treatment of blood pressure, especially low blood pressure. It gives a soothing and slightly sedative effect to the nerves, aids in clearing clogged arteries, and normalizes the circulatory system.
- Magnetized water is effective in the treatment of asthma, bronchitis, colds, coughs and certain types of fevers.

Any number of sites offer **cups and mugs** that purport to magnetize water or other beverages placed in them. Some of my chemist colleagues buy them as jokes, but most of the sales are probably to poor suckers who actually fall for this stuff. And you can even buy a magnetic funnel to pour your drinks through!

"By holding purified water, fresh juice or herbal teas in the Magnetic Energy Cup for 5 minutes or more, your liquids become restructured, 'living' and charged with energy. The magnets in the Magnetic Energy Cup can change the actual structure of liquids, increase the negative ions (good ions), make the liquids more alkaline and increase the amount of oxygen available for your cells. Another measured benefit of magnetized water is that its surface tension is lowered, which makes the water absorbmuch easier through the human membranes. What actually happens is that water gains 'living' liquid energy!" [link]

Few companies offer a wider variety of nonsensical flapdoodle than this one that hawks "water jar magnets" made by an outfit that touts itself as "the international free energy company". The flakeyness implied by this description is reflected in their touting of "magnetic monopole" technology— something that physicists, who have been trying to find these hypothetical creatures for years, might be surprised to hear about.

A Canadian outfit makes the following unfounded and ridiculous claims about the benefits of drinking "magnetized water":

• Reduces acidity and helps to regulate the body's pH level.
• Influences the autonomic nervous system.
• Beneficial for kidney ailments, gout, obesity, and premature aging.
• Helpful in internal cleansing of the body.
• Promotes healing of wounds and open sores when bathed in FEMO2 water.

• Dissipates toxic deposits within the body's connective tissues.
• The oxygen level in magnetically treated water is higher than the oxygen level of untreated water.
• Has a therapeutic effect on the body, especially the digestive, nervous and urinary systems.
• Magnetically treated water improves the taste.
• When water is magnetized, the surface tension is reduced for better cell absorption.

Here are a few examples of not-to-be-believed bunk from various sites, with the hype I consider false, misleading or meaningless indicated in color.

the bunk	the science
Water is a molecule made up of atoms which all contain electrons. When we magnetize the water, all the electrons take on the same charge[1]. Because like charges or poles repel each other, the molecules are pushed away from each other[2] breaking up the associations into singular stasis known as molecularly mono-atomic[3]. [link]	[1]Electrons are always negatively charged, and this has nothing to do with magnetization, which does not occur with water. [2]There is no reason to believe this and no scientific evidence to support it. [3]This term is nonsense.
More hydroxyl (OH-) ions are created... Normal tap water has a pH level of about 7, whereas magnetized water can reach 7.8 pH after exposure to a 7000 gauss strength magnet for a long period of time.	This claim is at odds with one of the fundamental laws of physics, namely that electric charge is conserved. Water can only become alkaline if metal ions are present. This statment is a veiled attempt to appeal to the "alkaline water is good for you" crowd; see my IonBunk page for more on this quackery.
Natural magnetization is important to the human body because it increases cell stability. Unlike other, artificially magnetized mineral waters, Nariwa mineral water retains its magnetization permanently because it's been naturally magnetized from the start.The natural magnetization of Nariwa water allows its molecules to be more organized. This allows easy absorption by the cells in your body. This also makes it easier and more efficient for accumulated toxins to be flushed out.	This outfit sells a spring water claimed to be "naturally" magnetized, unlike all those inferior artificially magnetized waters. The site is full of misleading flapdoodle reminiscent of those profiles on my pages on water cluster quackery and debunking unbelievable Clustered Water™ claims.
Why you should try drinking biomagnetic water. Biomagnetized water is better able to penetrate your cell walls because it's thinner, wetter, and more absorbable. Magnetic energy can be transported to every cell in your body by drinking biomagnetic water. Water is capable of being magnetized. Like oxygen, it's paramagnetic, meaning that it holds a magnetic charge.	More pseudoscientific garbage. [link] Water is not paramagnetic and oxygen is not ferromagnetic. And millions of years of evolution have provided perfectly adequate means of transporting water molecules through cell walls.
It will be decades before the science of magnetized water is fully understood. Those in mainstream medicine may discount magnetized water "quackery". That in the forefront of magnetic research paints a different story. If one understands and accepts that each of our cells possesses a small magnetic field, as many research studies are now supporting, the logical conclusion that magnetic water has the ability to affect our cells must be taken seriously. [link]	This is a common refrain of all kinds of snake oil hucksters: conventional academic-based scientists are just too inbred and narrow minded to accept anything that is not in the textbooks. Please see my What is Pseudoscience page for a rebuttal of this misleading nonsense.
When water goes through a FEMO2 System its	Every sentence here is an outright lie!

clusters become extremely small. This change occurs because the stainless steel chamber within the FEMO2 System creates a “left” spin that releases the energy needed to break down the hydrogen connections in water molecules, thereby making smaller water clusters. That spin changes the electron spin of the atoms, and these, in turn, cause physical changes in the water. The energy from that change is transferred to the person who drinks the water. [link]	Water "clusters" are continually disappearing and re-forming. The concept of right and left "spin" in the context of H_2O is nonsense. That these ficticious spin changes can release energy into the water, for subsequent transfer to the body, is absurd.
Many people question whether they should drink Negative Pole water or Positive Pole water. Actually, both are important and each has its own particular benefits. When water is magnetized, a charge value is put into the water. This value is in the same range as that of the human body. By drinking the charged water, it adds vitality to the body. [link]	These hucksters have come up with a new twist: north- and south-pole magnetized water! One has to admire their imagination! Many of these sites confuse N and S magnetic poles with positive and negative electric charge. Although magnetic monopoles are known to physics, you won't ever find them in water!

"Water is Paramagnetic ...meaning that it holds a magnetic charge" is just one of many lies and misrepresentations to be found on sites that flog an elastic band containing several magnets that you are supposed to slip over a container of water, wine, milk, or juice in order to increase the "bioavailability" of the water– very similar to the equally nonsensical claims by the clusterquackpot merchants. To support these claims, they mis-cite a number of Nobel Prize winners and offer various references to the scientific literature which are incomplete or, in one case, do not appear to exist. To add to the hype, one can see pictures that purport to show how the "magnetized filtered water" increases the growth rate of plant, especially if the south magnetic poles face the water(!).

One health-quackery newsletter site attributes these claims to one Michael Pedersen, the president of Aquaspace Water Systems, laughably identified as "one of the world's foremost authorities on water" and a company called AquaSpace. To add to the hype, they have former astronaut Jim Lovell cheapening himself by endorsing their products.

Magnetized water is not confined to the quackery market!

- here's a page that claims that "magnetized water" can improve the setting of concrete! Like many such poorly-documented (and highly unlikely) claims, these seem to originate in Russia, where anything seems to be possible!
- A number of outfits (example) peddle magnetic devices for agricultural applications. And look here to see what MW has done for this guy's lemon tree!

For those who seek the ultimate in magnetized water pseudoscience, this wonderfully-done HealthWalk screed features a mis-statement of fact in just about every paragraph; it appears that everything I learned in Physiology 100 is wrong!

More misleading magnet myths in
Magnetic water treatment and other scams