

# Water And Its Role In Health

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## INTRODUCTION

In recent years, it seems that every time you look at a newsstand, you're certain to find an article about drinking-water contamination. While water is a commonly discussed topic, the true problems with water are not commonly understood. This booklet is my attempt to illuminate those desiring to understand how water becomes contaminated, the health ramifications of such contamination and a practical process for selecting what I consider truly clean water.

It is my belief that the water we drink is potentially our greatest health hazard. On the other hand, enough clean water ingested on a regular basis is the key to restoring and maintaining vibrant health. This concept may seem too simple to be of value, but hundreds of health professionals have learned from experience that it is of critical importance.

## SECTION I

### CLEAR DOES NOT MEAN CLEAN

All water (except properly distilled) contains harmful contamination. There are four main categories of water contamination.

Category One - Industrial Chemicals.

One hundred years ago, cancer was responsible for three deaths per one hundred people. Presently, cancer kills one out

of four Americans and the numbers continue to rise! Experts estimate that at least half of cancer related deaths are directly resulting from the ingestion of chemicals found in our food and water.<sup>1</sup> There are presently over 70,000 chemicals in commercial use, twenty-five percent of which are known to cause cancer. This research was conducted on the effects of individual chemicals and does not account for the effects of combined chemicals. For example, rats when given three chemicals one at a time had no ill effects, yet when given those same three chemicals all at the same time were dead within two weeks!<sup>2</sup> This is known as the "chemical cocktail syndrome" and is what our bodies deal with on our toxic planet. There are additional health issues associated with chemicals, neurotoxicity is the most common and appears in the subtle form of reduced mental functioning, decreased I.Q. and inability to concentrate. Later stages of neurotoxicity include loss of feeling, Alzheimer's and Parkinson's disease, diabetes, chronic fatigue syndrome, seizures, thyroid disorders, female problems as well as ADD and hyperactivity in children. Birth defects, which continue to increase, have also been linked to chemical toxins. Pesticides are one of the most widespread and dangerous chemicals found in our water supply, including deep wells. To illustrate the accumulative problem of pesticides in the body as well as in the environment, I'll use the following study by the EPA. Human fat samples throughout the United States were analyzed for DDT (banned 10 years prior to this study due to its devastating effects on humans and animals), fifty-five percent of the fat samples still contained toxic levels of this once "considered as safe" pesticide.

Nitrates (the main ingredient in fertilizer) are also being spread in great quantities on farmland and lawns. Nitrates, which run off the soil when watered, are poisonous even in small amounts; ten parts per million in the drinking water of a newborn baby is deadly.

Most people are surprised to learn that chlorine, added to virtually all community water supplies, is extremely harmful to the human body. There has been a vast amount of research on the toxic effects of chlorine and its link to cancer, especially prostate cancer. Regular ingestion of chlorine also correlates with an increase of heart disease and digestive illness. The biggest concern with chlorine is its combining with acids in water to form even more toxic compounds such as trihalomethanes and chloroform. These compounds have been linked to cancer, spontaneous miscarriage, thyroid, liver and breast tumors. Dr. Joseph M. Price at the Saginaw General Hospital has been quoted as saying "Chlorine is the greatestcrippler and killer of modern times. All the time we thought we were preventing epidemics of one disease, we were creating another. Two decades after the start of chlorinating water, the present epidemic of heart trouble and cancer began." Dr. Price believes chlorination of water to be the major cause of hardening of the arteries, heart disease, senility and stroke.<sup>4</sup> One research study showed that regular use of chlorinated drinking water increases the risk of contracting bladder cancer by as much as eighty percent.<sup>5</sup> Some researchers speculate that chlorine may even be linked to multiple sclerosis and muscular dystrophy.

Plastic pipes can further contaminate water with the chemical polyvinylchloride (PVC). PVC leaches out of the pipes into the water and can cause immune, circulatory, nerve, liver and kidney damage.

### Category Two &ndash; Heavy Metals

Toxicity from ingestion of heavy metals is a well-known health issue. Water is a source for heavy metal exposure. The metal of most concern is lead even though lead rarely occurs naturally in water. Instead, the contamination occurs in the delivery process when it passes through corroded lead pipes. Many water systems, (because of their age) still contain lead service lines. And almost all homes contain lead solder used to connect copper pipes and brass fixtures. Children are at the greatest risk for lead toxicity ranging from delayed physical and mental development to anemia, kidney damage and mental retardation. Lead exposure during pregnancy can cause fetal damage, premature birth and reduced birth weight. In adults, lead has been linked to high blood pressure and hearing loss.

It is estimated that the toxicity from lead, along with four other heavy metals (cadmium, mercury, beryllium and antimony) contributes to one half of the deaths in the United States! Heavy metals find their way into the water supply by leaching out of the soil, or more importantly, from industrial contamination. The list of ill effects includes immune suppression, liver, kidney and brain cell damage, cancer, heart disease and psychological disorders.

### Category Three - Microscopic Organisms

Each day thousands of people make themselves sick by drinking microbially-contaminated water. Most of these individuals never suspect that the illness interrupting their lives and making them miserable could have been prevented. My experience with patients has been a dramatic reduction in the number of colds and flues once they changed to clean drinking water.

The common illnesses caused by these water born pathogens (microbes) include a weakened immune system, ulcers, diarrhea, nausea, liver disorders, skin problems, muscle and joint pain, infertility, prostate problems, respiratory illness, migraine headaches and other illnesses.

While in theory, public water supplies and bottled waters are supposed to be strictly monitored for microbes, there is a tremendous probability for error. In one study, virologists traced one third of the gastrointestinal illnesses (flue, diarrhea, ulcers, etc.) to the patients' drinking water!<sup>7</sup> Another study estimates that eighty-three percent of the water systems in the United States are in violation due to improper monitoring.<sup>8</sup> A government audit estimated that ten percent of the water receiving a passing grade did so only because the workers falsified results.<sup>9</sup> Water is not being tested continuously and when tested, its very simple for one to switch samples or add extra chlorine to samples to ensure all the bugs are dead. Often, when a microbe is detected in the water supply, municipal workers will withhold this information so as not to cause a public stir. Workers will then attempt for several days to correct the problem before posting a notice. In the meantime, the unsuspecting public gets sick assuming another flu bug is going around.

Certain strains of microorganisms in the water supply can be deadly. In 1993 a parasite called cryptosporidium found in the city water supply of Milwaukee, caused severe gastrointestinal illness in 400,000 people, 100 hundred of which died as a result.<sup>10</sup> In 1998 over 200 people in the town of Alpine, Wyoming became infected with a deadly strain of E. coli know as 0157:H7. They developed severe diarrhea, abdominal cramps and bloody stools. The worst complication of 0157:H7 is hemolytic uremic syndrome (&ldquo;HUS&rdquo;). The toxin produced by the bacteria damages the red blood cells, clogging up the kidneys. The complication of HUS is fatal in three to five percent of the cases. Survivors of HUS are seriously ill for up to two weeks.

The Alpine outbreak was caused by a contaminated spring in the mountains above the town, which fed into their municipal supply. Alpine like a good number of cities relies on springs for water. Note that many types of bottled water come from springs.

More recently, Walkerton, a city in Ontario Canada, had an outbreak of E. coli that killed four adults and an infant, and sickened hundreds more.

#### Category Four &ndash; Inorganic Minerals

Inorganic minerals are the most misunderstood contaminant in drinking water. Contrary to popular opinion, the minerals in water are not good for you. Because of the confusion regarding minerals, many health experts have researched and written about the subject. Harvey and Marilyn Diamond authors of Fit For Life 2 explain the mineral issue in the following way: &ldquo;It's true that chemically, an organic mineral is the same as an inorganic one. But there the similarities cease. The human body cannot use inorganic minerals &ndash; that is, minerals that have not already been organically processed. Minerals are only usable as they are found in organic forms of life such as plants, which make up an amazing link between the soils of the earth and animal life. Would you go into a gravel pit and pick up a piece of gravel and try to chew it up? Would you go out and pick up a handful of soil and eat it? Obviously not. Well, let your common sense answer here. Would you eat that piece of gravel if it were pulverized into particles small enough to swallow? Would you eat the soil if it were ground into a fine powder? There is no difference except in particle sizes. We are not rock or soil eaters. Your body cannot incorporate rocks into its cell structure. When you drink water containing minerals, they are inorganic. They're finely ground rocks! They have no more virtue in the human body than if the soil or rock itself were eaten.&rdquo;

When we drink water (other than distilled) the cells of the body become saturated with minerals it cannot use. Over time these minerals become deposited in the body causing kidney stones, gallstones, arterial plaque, arthritis, cataracts, gum and intestinal disease.

Dr. Charles Mayo, of the Mayo Clinic, made the following statement: "Water hardness (inorganic minerals in solution) is the underlying cause of many if not all of the diseases resulting from poisons in the intestinal tract. These hard minerals pass through the intestinal walls and get into the lymphatic system, which delivers all its products to the blood, which in turn distributes to the cells of the body. This is the cause of much human disease." It's true that we need minerals to maintain health. But if they are not in the organic form, i.e. from plants, the body is unable to utilize them. Eating a healthy diet of quality, fresh fruit, vegetables, grains and meats best provides for the body's mineral requirements. Supplemental organic trace minerals mined from decomposed plant vegetation can also be beneficial. These organic trace minerals can be potentially lacking in food if overfarming has depleted the soil.

## SECTION II

### IS YOUR DRINKING WATER CLEAN?

As you can see from reading the first section of this book, no matter what your drinking water source, it's potentially a health hazard.

The public generally understands that water can be unsafe, and so each year billions of dollars are spent on both bottled water and water filtration devices. Unfortunately, most attempts to clean up drinking water are only partly effective. The following is a breakdown of the types of bottled water and purification systems available.

#### Bottled Water

##### 1. Purified Bottled Water

If the label on a bottle of water states that it has been purified, then it technically meets tap water standards. Despite the designer bottles, it's estimated that seventy percent of the bottled water in the United States is obtained from municipal sources and reprocessed. One study reported that twenty-five percent of purified bottled water was filled straight from the tap.<sup>12</sup> Because tap water has had municipal treatment, the regulations consider it to be purified, making this deception technically in compliance with the law.

##### 2. Spring or Mountain Spring Water

As stated in Section I of this book, there is a potential for chemical, heavy metal, microbial and inorganic mineral contamination in all spring water. As rain falls to earth, it absorbs chemicals, heavy metals and inorganic minerals with which it comes in contact. Rainwater also comes in contact with a vast array of microscopic organisms along its journey. While it is understood that sand and gravel naturally filter water, this only removes heavy sediment (making the water clear instead of cloudy). All of the contaminants mentioned above remain in water despite its clean looking appearance.

##### 3. Mineral Water

Mineral water also typically comes from a spring source. The difference being that it is promoted as having additional health benefit due to the mineral content. As discussed in Section I, not only are there no benefits derived from inorganic minerals, they are potentially damaging. Mineral water has essentially the same contaminants as spring water.

#### 4. Distilled Water in Plastic Bottles

While distilled water is initially clean, it may easily become contaminated by its container. Chemicals in plastic such as methyl chloride and polyvinylchloride (known carcinogens) leach into water. While distilled water is especially prone to absorbing chemicals from plastic, all types of water will pick up contamination when sitting in bottles over long periods of time.

#### 5. All Bottled Water

Bottling is a problem with all water. EPA studies show that the majority of bottling facilities investigated had poor quality control of both source water and finished products.<sup>13</sup> The empty bottles are typically shipped without caps, thus exposed to airborne contamination. These bottles often contain chemical residues from the manufacturing process as well. The bottles are typically filled and shipped without being rinsed out or sterilized.

### Water Purification Systems

#### 1. Sediment Filters

Sediment filters are the most primitive type of filtering and are often combined with other filtering devices. They contain various filtering materials, through which water passes and are only effective in removing large particles. In addition, sediment filters have the potential of becoming a breeding ground for microorganisms once they have collected sediment.

#### 2. Water Softening

Softening replaces the calcium and magnesium in the water with sodium. Soft water does prevent damage to pipes, water heaters and fixtures and is an excellent choice for bathing and washing clothes. Despite much misunderstanding, soft water should not be used for drinking due to its high sodium content. Other than the hard minerals, no other contaminants are removed in the softening process.

#### 3. Activated Carbon Filters

Carbon does have the ability to remove certain organic chemicals and chlorine from water but does not remove microorganisms, nitrates, sulfates or heavy metals. Manufacturers do make claims that carbon removes heavy metals which is technically true if the metal is not dissolved. Most heavy metals (including lead) are in fact dissolved in the water and the carbon is not effective. The other problem with carbon filtration is that water (being full of hard minerals) soon saturates the carbon causing it to lose effectiveness. This problem can occur with only a minimal amount of use. Also, bacteria can grow as the filter saturates. As the colonies of bacteria get large, they can slough off into the water. Many cases of microbial illness have been traced back to a contaminated filter.

#### 4. Reverse Osmosis

Reverse Osmosis (RO) involves forcing water through a semi-permeable acetate membrane. It's reasonably effective in removing dirt (minerals) and may partially remove other contaminants when the membrane is new. Contrary to what the promoters of RO say, this popular type of filtration system has a lot of drawbacks. RO systems waste a tremendous amount of water. It takes between 10 and 20 gallons to get one gallon of treated water. RO systems have

been outlawed in parts of California with short water supply. RO units are heavily marketed primarily because of their profitability. They are inexpensive to manufacture yet retail between \$300 and \$1,500. There is little advantage to buying the expensive models because they all work on essentially the same principle. Even with routine service and replacement of the filters, RO will not remove soluble organic compounds such as pesticides or volatile organic compounds like chloroform and petrochemicals. RO is also not effective in the removal of most microorganisms, in fact bacteria tend to colonize on the membrane and eat pinholes in it. This problem can happen at anytime including a few hours after the filters have been replaced.

## 5. Combination Filters

There are systems available that use sediment, carbon and RO filters together. They also add UV light to kill the microorganisms. Although these systems are extremely expensive to buy and maintain, they still only do a reasonable job of cleaning water.

## 6. Steam Distillation

Steam distillation is a totally different approach to cleaning water. Rather than trying to remove the contaminants from water, the water is removed from the contaminants. This is accomplished by turning the water into vapor in a boiling chamber. The vapor, naturally rising, leaves the impurities behind. It then passes through a condensing coil turning it back into liquid. Certain contaminants when heated can also vaporize. A good water distillation system does two things to make sure these contaminants are removed: (i) a volatile gas release vent is placed at the highest point in the system allowing the majority of those chemicals to escape before entering the condensing coil, and (ii) at the end of the condensation processes, the water passes through an activated charcoal filter which removes any residual molecules which did not vent off. Charcoal filtering is very effective in residual volatile containment removal if the dirt and microorganisms have been first eliminated from the water by distillation.

Most experts estimate that even the dirtiest water put through the proper distilling process (as described above) will remove 99.9% of all contamination. Commercial and home distillers have been manufactured for many years, and, although they continue to gain popularity, water distillation has never been marketed on a large scale as have other filtering devices. The general public knows little about the concept of distillation and is even fearful of distilled water as a result of misinformation. Because mineral water has been marketed as being good for you, it's assumed that water without minerals is somehow unhealthy. The other common misconception is that distilled water "leaches" minerals out of the body. While regular use of distilled water does have the potential of helping the body rid itself of harmful deposited inorganic minerals, there is no evidence that even a lifetime of drinking distilled water has any affect on the beneficial mineral content in the body. Distilled water is essentially nothing more than rainwater. All water is distilled naturally when it evaporates off the earth. Unfortunately, by the time we drink rainwater, it's fallen through a dirty atmosphere and onto the dirty ground, collecting contaminants along the way.

There are no drawbacks to drinking distilled water. Most people, once they have drank distilled water for a while, find themselves easily consuming more water than they use to (the next section will explain the benefits of more drinking water). I challenge my patients to drink nothing but distilled water for one month. Most will continue to drink distilled water because their body instinctively knows that the distilled is better.

## SECTION III

### Are You Dehydrated?

The most fundamental element for life is clean water. Plenty of clean water in the body promotes growth, healing and ongoing detoxification of all the cells of the body. Water is the universal solvent. Every physiological and biochemical

process of the body depends on water. A person can live weeks without food, but only three to four days without water. Total body composition is between seventy and eighty percent water. Approximately two and one half quarts of water is lost from the body each day. Exercise dramatically increases water loss beyond this amount. Just a three- percent loss in total body weight (through water loss) will impair the performance of an athlete and may cause headache, fatigue and dizziness. A five- percent loss puts a person at serious risk for heat exhaustion.

Aside from those engaged in athletics, there are many individuals who suffer from subclinical dehydration. Because the body is adaptable, it will still function on less water but over the long term, the side effects can be devastating.

The other key issue is the toxic world in which we live. As mentioned in a previous section of this book, the accumulation of toxic substances within the body is linked to a variety of serious diseases. Drinking large amounts of clean water is paramount in helping the body rid itself of stored toxins.

The following common health conditions can be caused by a simple lack of water:

Weight gain.

Weight gain is a red flag that the body is not functioning at its optimum. While this can be a complicated issue, dehydration may play a role in the following ways:

When a person is subclinically dehydrated, they often misinterpret the sensation of thirst for the hunger sensation. The brain generates these sensations simultaneously and it's difficult to separate the two. So a person eats when he or she should actually be drinking more water, and water is calorie free.

The fat cells are also a primary area where toxins are stored. The body is unable to burn fat when it's loaded with toxins. In addition, the toxic laden fat cells are unable to synthesize the natural appetite suppressant called "lepton." Lepton has been found to be deficient in overweight people.<sup>14</sup> Drinking large quantities of clean water assists the body in the detoxification of its fat cells that in turn will allow these normal processes to take place.

Drinking more water also stimulates higher metabolic functioning by (i) thinning blood plasma, thus allowing the body to more efficiently carry out its biochemical functions (if plasma volumes are in fact low, i.e. the blood is too thick, membrane and other transport slows greatly) and, (ii) assisting in thyroid detoxification. The thyroid is the "master gland" of metabolism. It is very susceptible to suppression by chemical toxins, especially pesticides. (Pesticides work by disrupting hormone function.) Many other environmental chemicals also interfere with thyroid function such as bromoform, resorcinol and dihydroxy benzoic acids to name a few. Low thyroid function has reached epidemic proportion in recent years and the use of thyroid replacement hormones are only partially effective. From my clinical experience, detoxification has been the only way to effectively increase thyroid function long term.

The other key factors to weight loss as well as better health and vitality is regular exercise. Dehydrated individuals typically do not have the energy required to carry out a regular exercise program. When water intake improves, so do energy levels.

Headaches.

Headaches are a classic symptom of dehydration and many of my patients successfully treat headaches by increasing their water intake. Dehydration causes overheating in the cranial cavity, blood flow changes, metabolic waste build-up, and neck spasms, all of which can lead to headaches.

## Body Aches and Pains.

Body aches and pains are so common that they are considered by many to be normal. Neglecting to treat the underlying cause of these pains can result in permanent damage to the joints and muscles. Pain medications only treat the symptoms and are extremely toxic to the liver and kidneys.

A major factor in body pain (fibromyalgia included) is the accumulation of metabolic waste and other toxins in these tissues. Drinking more water greatly increases the removal of these substances.

If the cartilaginous surface of a joint becomes dehydrated, abnormal friction occurs with joint movement, causing these surfaces to wear thin and eventually wear out prematurely.

The discs of the back and neck have a jelly-like center (primarily composed of water) which act as shock absorbers for the spine. If not continuously rehydrated, the discs become thin, ultimately resulting in chronic back and neck pain.

## Digestive Problems.

Adequate hydration before eating is critical to proper digestive function. When we eat, large quantities of digestive juices are needed to breakdown food. The body is not able to effectively produce and secrete these juices if dehydrated.

The lining of the stomach also contains a protective mucous layer primarily consisting of water. This layer protects deeper layers from being damaged by stomach acids. Dehydration causes this layer to become thin, resulting in more irritations by the acids. Many of my patients have experienced a dramatic decrease in heartburn and other digestive pain by simply increasing their water intake. This lack of protection by water can lead to ulcers.

## Constipation.

Adequate water intake has been found to be a key factor in helping the colon function properly. Without adequate water, the stool becomes hard and dry, greatly increasing the difficulty of elimination. Proper elimination plays a key role in good health. Research has linked constipation to most of the diseases of the colon including cancer. Hard stools are also the primary cause of hemorrhoids, another common malady in our society.

## Heat and Cold Intolerance.

Water is one of the primary regulators of body temperature. Dehydration causes the blood to be sluggish, making circulation to and from the body surfaces more difficult. Many of my patients have noticed a dramatic difference in how well they handle extremes of heat and cold when they are drinking enough water.

## High Blood Pressure.

When the body lacks fluid, the blood vessels must constrict and the heart must pump harder to compensate. The kidneys also conserve water by decreasing urinary output. While these survival mechanisms do prevent circulatory collapse, the down side is higher blood pressure.

Medical doctors have long known that decreased urinary output causes high blood pressure, hence their use of diuretic medications. Perhaps a much safer alternative would be to stimulate increased urinary output with large quantities of water. Research shows that the kidneys do respond to this simple procedure and in fact the urinary output remains higher hours after the excess water has been eliminated.

### High Cholesterol.

Lack of water in the body can also cause another interesting phenomenon to occur. If the body is not well hydrated, the osmotic pressure of the blood increases causing more fluid to pass out through the walls of the cells. To prevent cell damage, the body in its wisdom increases cholesterol production. (More cholesterol in the cell walls decreases their permeability, which in turn prevents too much fluid loss out of the cells.) Dehydration is one of several underlying causes of high cholesterol. It is my opinion that lowering cholesterol with a drug instead of treating the underlying cause leads to more health problems.

### Asthma.

The lungs are a site for water loss as a result of evaporation during breathing. In certain cases of dehydration (in its attempt to conserve water) the body overreacts by constricting its bronchial passages. (The body does this by increasing its production and secretion of histamine in the lungs). Animal studies show that histamine production decreases with regular increased amounts of water. Many allergies are also related to an over abundance of histamine. While allergies and asthma may be caused by other problems as well, better hydration is the first step in the healing of these common conditions.