



## **Healthy Alternatives Distributors**

**“Your Water Filtration System Solution”**

Pure Water Wherever You Go!

**Healthy Alternatives Distribution**  
PO Box 1679  
Kings Beach, CA, 96143  
1-800-607-8004 // 530-546-5850



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Water is the most common substance on earth. This might lead us to believe that that fresh drinking water is plentiful. Unfortunately, the opposite is true. Only 2.53% of global water supply is fresh — the rest is salty. Adding to the shortage, nearly two-thirds of that fresh water is locked up in glaciers and snow cover.

If the tiny percentage of fresh water available to us were clean, we might have enough for the world's growing population. But it's not. More and more, our precious water supply is dirtied by pollution and disease. At present, more than 1.1 billion people lack access to clean water.<sup>1</sup> The United Nations estimates that by 2050, that number will increase: Up to 7 billion people will lack safe water for drinking, eating and bathing.<sup>2</sup>

These numbers may be hard to grasp. Here's an easier way to explain it: Over the next 20 years, the per-person clean water supply is expected to decrease by one-third.<sup>3</sup> A shortage of this size will certainly cause inconvenience and higher costs for consumers, but the issue is far more serious than that.

### **Dirty Water: A Deadly Global Problem**

The Pacific Institute estimates that between 52 and 118 million people will die of preventable water-related diseases by 2020. (The figure could actually range as high as 135 million.)<sup>4</sup>

If such numbers are too large to fathom, break them down. For example, the World Health Organization estimates that up to 5 million people die each year from a lack of clean drinking water. That's more than 13,000 deaths per day — most of those being children killed by virulent, preventable diarrhea.<sup>5</sup>

The U.N. estimates that more than 50% of the developing world drinks from polluted water sources. However, unhealthy water isn't just a Third World problem.<sup>6</sup>



### **Different Countries, Similar Problems**

According to the Center for Strategic and International Studies, effective solutions to the global water crisis must be specifically tailored to the socioeconomic and geographic conditions of each region. That said, note the similarity — and severity — of the problems faced by different countries.<sup>7</sup> Below is a brief outline of the challenges faced by five countries. Note how, regardless of the causes of clean water shortage, there is an immediate need for point-of-use purification solutions. These will allow individuals to protect themselves from disease while the public and private sectors correct the underlying causes of contamination.

**United States** | As an industrialized country with a growing population, the U.S. faces many challenges. Following is a list of factors contributing to the growing pollution of groundwater and surface water sources:

- Acid rain, the result of pollution from transportation and industry.
- Excessive fossil fuel consumption. (The U.S. is the single largest emitter of carbon dioxide in the world.)
- Significant quantities of agricultural runoff containing pesticides and fertilizers.

The U.S. must also confront a complex water management scenario: The western part of the country has very limited natural fresh water and booming urban populations; in addition, desertification and increasing storm activity, both potentially linked to climate change, could further reduce clean water availability.<sup>39</sup>

**Canada** | Already a developed nation, Canada has a lower population density. Many of its water development challenges stem from industrial exploitation of its abundant natural resources:

- Acid rain, causing severe damage to lakes and rivers.
- Metal-smelting, coal-burning and vehicle emissions negatively impacting air quality and clean water sources.
- Ocean waters becoming contaminated due to agricultural, industrial, mining and forestry runoff.

Canada also contends with permafrost in the north, a serious obstacle to water management.<sup>40</sup>

**Mexico** | The government of Mexico considers their lack of clean water, combined with deforestation, to be national security issues. A developing nation, Mexico faces many threats to clean water access including:

- Scarcity of hazardous water disposal facilities
- Significant migration to urban centers
- Raw sewage and industrial effluents polluting rivers in urban areas
- Deforestation, desertification and significant erosion
- Severe groundwater depletion in the Valley of Mexico, causing land subsidence

Natural freshwater resources are scarce and polluted in the north of the country; in the central and southeast management they are either inaccessible or poor quality.<sup>41</sup>

**China** | In July 2006, the world's fourth-largest country will boast a population of 1,314,000,000 people, which places significant stress on any clean water delivery system. In addition, China must cope with the following environmental challenges to its freshwater sources:

- Acid rain, the result of air pollution (greenhouse gases, sulfur dioxide particulates) from coal consumption.
- Dropping water tables, particularly in the north.
- Dumping of untreated wastes into water sources.
- Deforestation and desertification.
- Estimated loss of one-fifth of agricultural land to soil erosion and economic development (since 1949).

Industrialization is polluting China's water sources. These must be protected, or China's ability to support its large population will be in jeopardy.<sup>42</sup>

**India** | The world's second most populous country with over 1 billion people (July 2006), India faces hurdles similar to Mexico and China. Access to clean water is threatened by the following trends:

- Deforestation and desertification
- Soil erosion, especially from overgrazing
- Air pollution from industrial effluents and vehicle emissions
- Water pollution from raw sewage and runoff of agricultural pesticides

In India, natural resources are stressed to the limit by the huge and growing population. Tap water is not potable — the need for point-of-use filtration is critical.<sup>43</sup>



## What's Causing the Crisis?

Like most global problems, the clean water shortage will result from the interaction of complex environmental trends, the majority of which are man-made. We are increasing the demand for clean water while decreasing the supply — a dangerous combination.

### Increasing Demand

**Population growth** | According to the United Nations' most recent calculations, approximately 8.9 billion people will crowd the planet in 2050.<sup>7</sup> (Compare this staggering number to the world's 6.1 billion inhabitants in 2001.) Population increases are exponential and result in skyrocketing demand for water clean enough for bathing, cooking, drinking and washing. Population growth is the primary driver behind the trends listed below.

**Agriculture** | Casual agriculture, also known as unmanaged agriculture, cannot feed the Earth's growing population. Systematic agriculture, which uses irrigation, pesticides and other techniques, now meets our need for food. Irrigation uses a stunning 70% of our fresh water; in another 30 years that figure will increase by 14%.<sup>8</sup>

**Industrialization** | Industrial use already accounts for 22% of global current water usage. Low-income nations will continue to industrialize to fight poverty among their booming populations. Keep in mind that while manufacturing brings economic development, it also threatens clean water sources both adjacent to factory sites and long distances away.<sup>9</sup>

### Decreasing Supply

**Pollution** | Even young children quickly grasp this basic dilemma — the more we pollute our environment, the less clean water we have on hand. Each day, humankind dumps 2 million tons of waste into receiving waters, including human waste, industrial waste and chemicals, and agricultural runoff such as fertilizers and pesticides.<sup>10</sup> Reliable global statistics are difficult to establish; nevertheless, it's probable that at least 12,000 km<sup>3</sup> (7,452 mi<sup>3</sup>) of the earth's freshwater is contaminated, and the number will likely increase to 18,000 km<sup>3</sup> (11,178 mi<sup>3</sup>) by 2050.<sup>11</sup>

**Increased urbanization** | In 2003, 48% of the world's population lived in cities. By 2030, the figure is expected to rise to 60%. When people live in compact areas, their impact on local water supplies is magnified: concentrated amounts of the human and chemical pollutants mentioned above, plus air pollution, seep into rivers, reservoirs and underground aquifers.<sup>12</sup>

**Climate change (global warming)** | Water quality worsens with rising temperatures, due to microbial growth. In addition, global warming triggers climactic imbalances such as flooding in some areas and droughts in others — both causing increased pollution of water sources. For these and other reasons, U.N. scientists predict that climate change will cause one-fifth of the increasing freshwater scarcity.<sup>13</sup>

**Aging infrastructure** | In both rich and poor countries, water treatment and distribution systems are aging — the filtration technologies may be antiquated, and pipes and related equipment are often old or poorly maintained. As a result, water delivered to the consumer contains unhealthy amounts of physical contaminants, chemicals or microbes. Many treatment facilities increase their use of chlorine to kill the microbes, but this tactic has significant long-term consequences on human health.



### **Chlorine: A Blessing and a Curse**

Chlorine dioxide is a gas used to disinfect drinking water and make it safe to drink. Chlorite, its chemical relative, forms when chlorine dioxide reacts with water. Trihalomethanes (THMs) form when chlorine reacts to organic material in water.

Chlorine disinfection is highly effective as a microbial killer, and its use in water treatment has preserved all of us from serious illnesses like cholera, diarrhea and typhoid. Unfortunately, there is growing evidence that chlorine and THMs cause cancer.

There is controversy surrounding the degree to which chlorine is carcinogenic. The ATSDR web page on chlorine states: "Based on inadequate information... the International Agency for Research on Cancer (IARC) and the EPA have determined that chlorine dioxide and sodium chlorite are not classifiable as to human carcinogenicity."<sup>1</sup> However, the National Cancer Institute estimates that cancer risks for people who consume chlorinated water is 93% higher than for people who do not.<sup>34</sup>

One of the best water treatment strategies uses chlorine as a biocide (germ killer), then filters out the carcinogenic disinfection byproducts. For example, Healthy Alternatives Distributors Environmental Technology combines Redi-Chlor chlorine tablets with their revolutionary Ionic Absorption Micron Filtration system to produce water that is free of both microbial and chlorine-related contaminants. (See "Certified Effectiveness" on page 12 for more information.)

## **Contaminants and Their Impact on Our Health**

As the booming population simultaneously demands more clean water while polluting available sources, we are gaining better scientific data regarding the contaminants in our water and the consequences of exposure to them.

### **The ABCs in Our Drinking Water**

So what's in our water? Contaminants fall into four major categories.

**Aesthetic contaminants:** These cause unpleasant odor or taste. They include:

- chlorine (and other chemicals listed below)
- particulates: silt, sand and sediment

**Biologics:** This general term describes microscopic pathogens (disease-inducing agents).

- bacterium: coliforms including *E. coli* and fecal coliform
- microscopic parasites: *Giardia lamblia*, *Cryptosporidium*

**Chemicals:** This list is quite long. Below are some of the most frequent:

- volatile organic compounds (VOCs): acetone, benzene, MTBEs, PCBs and vinyl chloride
- detergents: chlorine and trihalomethanes (THMs), which are formed when natural organic material reacts with chlorine used to treat water
- pesticides: DDD, DDT
- industrial byproducts: polychlorinated biphenyls (PCBs)
- agricultural run-off: synthetic organic compounds (SOCs)

**Dissolved solids:** The result of industrialization and urbanization, this list includes

- heavy metals: aluminum, arsenic, asbestos, copper, fluoride, lead and mercury
- radiologics: radon, radium, chromium 6, anthrax and uranium

Note: Healthy Alternatives Distributors products remove 99.99% of all of these contaminants.



## The Consequences of Contamination

A large number of health problems result, in part or in whole, from the consumption of dirty water. Illnesses such as intestinal distress from bacterial infections emerge immediately after consumption, while diseases like cancer develop after prolonged, frequent exposure to minute quantities of contaminants. Here's a quick overview of illnesses found in both developing and developed nations.

**Waterborne diseases** | These illnesses are caused by the ingestion of water contaminated by feces and urine. If the water contains pathogenic bacteria or viruses, infections such as cholera, diarrhea, dysentery and typhoid will result.

Waterborne diseases also include more than 30 species of parasites. For example, the microbial parasites *Giardia* and *Cryptosporidium* afflict both the developed and developing world. Other highly destructive parasitical diseases include amoebiasis, ascariasis, schistosomiasis and tapeworm (taeniasis).<sup>14</sup>

**Miscarriages, birth defects and childhood diseases** | Heavy metals such as lead and chemicals, such as VOCs, have been linked to neural tube defects, oral cleft defects, congenital heart defects and/or childhood leukemia.<sup>15</sup> Nitrates have been linked to spontaneous abortions and blue baby syndrome.<sup>16</sup>

**Tissue and organ disorders** | VOCs and heavy metals have been connected to the damage of critical organs including the liver, kidney, skin, muscles, circulatory and nervous systems. The Agency for Toxic Substances and Disease Registry (ATSDR) maintains a "Top 20" list of high-risk chemicals. The latest list, released in 2005, is a veritable rogues' gallery of pollutants, all of which can pollute drinking water and cause serious long-term health problems.

**Cancer** | The International Agency for Research on Cancer (IARC) has classified arsenic, asbestos, benzene, cadmium, nickel, radon, vinyl chloride and uranium as known human carcinogens because studies proved a link between cancer and exposure to these substances. Other chemicals have been shown to cause cancer in animals and are classified as suspected carcinogens: chloroform, DDT, formaldehyde and polychlorinated biphenyls. The organs most affected by carcinogenic substances include the stomach, liver, bladder, kidney and prostate.<sup>17</sup>

## Drinking Water in the Developed World

For those of us in the First World, the dangers of contaminated drinking water and the growing global shortage of potable water may seem unreal. After all, we don't often watch our children die from waterborne diarrhea, and the connection between cancer and contaminated tap water is difficult to visualize because it appears over a long period of time.

As long as tap water meets basic safety standards, do those of us in the developed world really have a problem? We do, and to prove the point, let's briefly examine the drinking water in the most developed nation in the world — the United States.

The U.S. Safe Drinking Water Act (SDWA) is the main federal law that ensures the quality of Americans' drinking water. Under SDWA, the EPA sets standards for water quality and oversees the states, localities and water suppliers who implement those standards.<sup>18</sup>



Thanks to the SDWA and EPA efforts, American drinking water is among the safest in the world and Americans take clean, safe drinking water for granted. They shouldn't. In spite of the EPA's efforts, scientists from the National Resources Defense Council estimate that each year up to 7 million Americans become sick from contaminated tap water, which can also be lethal.<sup>19</sup>

According to the NRDC report *What's On Tap*, "many cities around the country rely on pre-World War I-era water delivery systems and treatment technology. Aging pipes can break, leach contaminants into the water they carry and breed bacteria — all potential prescriptions for illness. And old-fashioned water treatment — built to filter out particles in the water and kill some parasites and bacteria — generally fails to remove 21st-century contaminants like pesticides, industrial chemicals and arsenic."<sup>20</sup>

#### **A Traditional Approach to Municipal Water Treatment**

Water suppliers use a variety of treatment processes to remove contaminants from drinking water. These are arranged in a specific sequence, which often includes the following steps:

1. Coagulation (flocculation and sedimentation): Alum and iron salts or synthetic organic polymers are added to the water to form sticky particles ("floc"), which attract dirt particles. The flocculated particles then settle to the bottom as sediment.
2. Filtration: Removes particles from the water. Filters are often made of layers of sand, gravel and charcoal.
3. Disinfection: Chlorine, chlorinates or chlorine dioxides are added to the water to kill microbes.<sup>35</sup>

In a recent study of 19 major American cities, the NRDC found four major categories of contaminants:

1. Heavy metals: lead
2. Pathogens (germs)
3. Chlorine by-products: THMs and haloacetic acids
4. Toxic chemicals: arsenic, radon, the rocket fuel perchlorate and other carcinogens

This same study found that few American cities were in outright violation of national standards for contamination of drinking water, not because their water was clean, but because national standards are weak. For example, the EPA standard for arsenic is 10 parts per billion (ppb). It's currently present in the drinking water of 22 million Americans at average levels of just 5 ppb. However, this low level, while EPA-compliant, is still a health hazard because scientists now recognize that there is no safe level of arsenic for drinking water.<sup>21</sup>

In November 2005, the EPA agreed to adopt new, stricter standards for water suppliers. Two key changes being implemented include:

1. Improved treatment and monitoring of surface source waters to prevent parasites like *Cryptosporidium*
2. Lower acceptable levels of disinfection by-products

The EPA estimates its new surface water treatment rule alone would prevent more than a million illnesses and as many as 141 deaths annually; it also estimates that the new disinfection byproducts standard would prevent hundreds from dying from bladder cancer, would reduce the incidence of other cancers and could cut the number of miscarriages from 4,700 to 1,100 a year.<sup>22</sup>

If the safest drinking water in the world can be so harmful Americans, like the rest of the world, must begin to take water quality seriously.



### Local Drinking Water Quality (U.S.)

Within the United States, each state faces unique challenges to the quality of its drinking water. For example, cities in Kansas must monitor their source water for contamination from agricultural runoff, while industrial pollution troubles cities in the Northeast.

Each year by July 1 you should receive in the mail a short report (consumer confidence report, or drinking water quality report) from your water supplier that tells where your water comes from and what's in it: You may also research the quality of your local drinking water at the following web sites:

AWWA: <http://www.awwa.org/community/links.cfm?FuseAction=Links&LinkCategoryID=17>

EPA: [www.epa.gov/safewater/dwinfo/index.html](http://www.epa.gov/safewater/dwinfo/index.html)

USGS: <http://waterdata.usgs.gov/nwis> and <http://water.usgs.gov/nawqa/>

### Solutions for Pure Water

At the end of the 19<sup>th</sup> century, large water treatment plants and municipal distribution infrastructures began improving the quality of drinking water in industrialized countries. Although more than a century has passed, access to drinking water that is both safe and affordable eludes even developed nations.

International efforts to create centralized clean-water solutions will continue; these solutions include international water treatment centers, international clean water trade agreements and desalinization plants.<sup>23</sup> However, these strategies are both time- and resource-intensive, and waiting for implementation will leave hundreds of millions of people without access to potable water well into the foreseeable future.<sup>24</sup>

Decentralized water treatment technologies allow individuals and small, local groups to guarantee the purity of their water where providers cannot guarantee water quality at the point of supply or point of use.<sup>25</sup> According to the United Nations' World Water Development Report, disinfection of water at the point of use is consistently the most cost-effective intervention guaranteeing the level of cleanliness necessary for health. Furthermore, disinfection of water with chlorine tablets at the point of use, combined with safe water storage and hygiene education, provides the biggest health benefit at the lowest incremental cost.<sup>26</sup>

### Point-of-Use Methods for Purifying Water

Point-of-use solutions are not created equal. Their effectiveness, ease of use and total cost of ownership vary widely. Below are basic options currently available to individual consumers.

**Boiled water** | This low-cost method effectively kills microorganisms and parasites like *Cryptosporidium*. Unfortunately, if water is contaminated with toxic chemicals and heavy metals, boiling it actually increases the concentration of toxins. "Boil orders" are used during emergencies to protect people from microbial contamination, but boiled water is not purified water and boiling is not a long-term solution.

**Reverse osmosis (RO)** | This method purifies water by forcing it, under pressure, to pass through a membrane and leave contaminants behind. RO is highly effective, removing microbes, chemicals and turbidity at levels of 850 ppm or less (up to 90% effectiveness). RO also has significant limitations. It wastes water, consuming five to seven gallons of tap water to create one gallon of pure water. It's also expensive and requires storage tanks, which need to be disinfected periodically. Users must also keep in mind that RO units have daily production limits.



**Distillation** | This process involves thermal separation and evaporation. Steam from boiling water is routed into a cooling chamber where it condenses into purified water. Distillation is highly effective, removing virtually all dissolved solids- less than 1-5 parts per million (ppm). It also eliminates pathogens, chemicals and sediment. However, we now know that chloroform and organics have lower boiling points than water and can vaporize into the clean water. This process is time-consuming and expensive, requiring energy, holding tanks and significant maintenance.

**Filtration** | This purification method forces water through screens with microscopic holes. There are two aspects to the filtration process:

1. Mechanical: eliminates contaminants by making the holes in the screens too small to allow contaminants to pass
2. Adsorptive: captures contaminants in the pores of the screen's solid material, which is either activated carbon or powdered coconut.

The size of the screen's holes are measured in microns. An absolute micron rating indicates the size of the largest hole; a nominal rating shows the average size of all the holes in the filter. The EPA recommends that filters use an absolute measurement capable of removing *Cryptosporidium*. (For a complete list of contaminants, see [\*Water On Tap\*](#).<sup>27</sup>)

Filtration is an easy-to-use purification solution with minimal energy requirements. No water is lost during the process and the only limit to daily production is the capacity of the filtration solution itself. The effectiveness varies according to the size of the holes in the screens and the composition of the filter. Powdered coconut provides a superior result due to better adsorptive performance.<sup>28 29</sup>

#### What About Bottled Water?

The bottled water is one of the fastest-growing and least regulated industries in the world. In the 1970s, the annual volume was 300 million gallons. In 2000, it was over 8 billion gallons, traded globally, with over 90% of it in non-reusable plastic containers.<sup>1</sup> By 2004, the U.S. market alone was 6.8 billion gallons.<sup>37</sup>

Consumers rely on bottled water because of its portability and perceived purity. While it will continue to play an important role, packaged water has limitations which will limit its usefulness in addressing the potable water shortage. The negatives include:

**Short shelf life** | Over time, the plastic containers break down, leaching toxic chemicals into the water.

**Unreliable quality** | A 1999 study by the NRDC found that one-fourth of the 103 brands surveyed were actually tap water and one-third had significant levels of arsenic and *E. coli*.

**Wasteful packaging** | Empty plastic bottles now litter public areas and choke private dumpsters. Ironically, a product the positions itself as environmentally sensitive is a cause of landfill pollution.

**Costly transport** | Water is heavy. Corporations and governments are exploring ways to ship potable water internationally; while necessary in some cases, such transportation wastes energy and abuses the environment.

## Healthy Alternatives Distributors — Superior Filtration Technology

### Certified Effectiveness

Healthy Alternatives Distributors' proprietary filtration products reduce aesthetic, microbiological, chemical and dissolved solid contaminants by up to **99.9%**. In the U.S., their effectiveness has been certified by independent [laboratory testing](#) conforming to strict EPA, NSF and ANSI standards.<sup>30</sup> Their products also have been tested and approved in 16 countries, including South Africa and the United Kingdom.



Healthy Alternatives Distributors's proprietary filtration technology, known as Ionic Absorption Micron Filtration, uses four processes of contaminant reduction: filtration, absorption, chemical bonding and chelation. Derived from medical technology, the high-tech porous plastic micro-filter is impregnated with the finest granulated, activated coconut carbon media and three other media, which give it its unique performance characteristics. In addition, 2-micron omni-directional pores create a "torturous path" for superior analyte reduction that enables the filter to achieve its superior contaminant reduction rates.

Healthy Alternatives Distributors also offers an advanced version of its proprietary filter media using EPA-registered resin that kills all virus and bacteria found in any fresh water source. The advanced filter is ideal for emergency and stagnant water conditions.

### **Products at a Glance**

Healthy Alternatives Distributors offers a wide range of point-of-use filtration solutions, including water bottles for personal use, in-line and shower filters, pumps and backpacks.

[Insert product images below — with links to the product descriptions on the site.]

#### **Personal Portable Filtration**

Canteens

Water bottles

Emergency bottles

Pure water straw

Hydration backpack (coming Fall 2006)

Vending machines (coming Spring 2007)

#### **Home and Office**

Water pitcher

Shower filters

#### **Portable Filtration**

In-line hydration filters

Pump (5 gal.)

#### **Accessories**

Insulators

Redi-Chlor chlorine tablets

Replacement Filters

For more information on Healthy Alternatives Distributors products, visit: [www.Healthy Alternatives Distributors.com](http://www.Healthy Alternatives Distributors.com).

### **Global Trends**

Clean water is becoming a global privatized industry. The World Bank values the market at close to \$1 trillion, with only 5% of the world's population obtaining water from corporations, the profit potential is nearly unlimited. The U.S. is the world's most lucrative market with annual revenues estimated at \$90 billion.<sup>31</sup>

According to numerous sources, the \$1.6 billion U.S. water filtration market grew 28% from 1998 to 2003. The primary sources of competition are bottled water and residential systems installed by professionals (not included within the scope of this report). Continued trends towards healthy lifestyles and the concerns of aging adults should maintain positive, though moderate, sales growth through 2008.<sup>32</sup>



The following global trends will drive the market for filtration solutions:

**Increased public awareness** | Increased media attention to environmental and health issues has created a growing concern about the impact of beverages on our well-being.

**Growing affluence** | In the developed world, many have disposable income to be spent on commodities like clean water, developing countries like India and China have growing middle classes.

**Intensifying water shortages** | According to the WorldWatch Institute, China may be the first nation to restructure its entire economy around dwindling clean water sources. Other nations will eventually follow suit.<sup>33</sup> Affordable point-of-use filtration solutions will be a godsend to cash-strapped populations.



## Glossary

### Basic Terms

Activated carbon	A form of carbon that has been heated to high temperatures in the absence of oxygen to produce millions of microscopic pores with great surface area and absorptive qualities
Aquifer	A natural underground layer, often of sand or gravel, containing water
Bacteriostatic	That which suppresses or inhibits the growth of bacteria, usually by the addition of silver.
Carcinogen	A substance or agent producing or inciting cancer
Chelation	The process of binding the central atom of a metal to a large molecule (ligand). Any ligand that can bind to the metal at two or more points to form a ring structure, more stable than a nonchelated compound of the same general chemical formula, is a chelating agent.
Chloramines	A chemical produced from the combination of chlorine and ammonia. Used to disinfect water supplies as an alternative to chlorine.
Chlorine	A toxic biocide consisting of a halogen element isolated as a heavy greenish-yellow gas with pungent odor. Used as a disinfectant in water purification.
Disinfectant	A chemical or physical process (e.g., ultraviolet light) that kills microorganisms such as viruses, bacteria and protozoa
Inorganic	Being or composed of matter other than plants or animals
Microns	A unit of length measuring one millionth of a meter. The smallest bacterium is about 2 microns across.
Organics	Any of the compounds whose chemical structure is based on carbon. Includes carbon dioxide, wood, protein, plastics, methane and THMs.
Potable	Suitable for drinking
Ppb	Parts per billion
Ppm	Parts per million
Sediment	Dirt, clay, silt and vegetation which are suspended in water
TDS	Total dissolved solids

### Terms for Water

**Groundwater** is pumped from an aquifer.

**Filtered water** no longer contains aesthetic contaminants and microbes removable by standard filtration technologies.

**Purified water** is safer than simple filtered water because it contains no aesthetic, microbial, chemical or dissolved solid contaminants.



**Surface water** is obtained from a body of water on the surface of the earth, such as a river or lake.

## Endnotes

- <sup>1</sup> Michael McCarthy, "Water Scarcity Could Affect Billions: Is This the Biggest Crisis of All?" *Independent UK Online Edition* ([www.independent.co.uk](http://www.independent.co.uk)), Mar. 5, 2003. Cited in *Common Dreams News Center* ([www.commondreams.org](http://www.commondreams.org)).
- <sup>2</sup> *United Nations World Water Development Report: Water for People, Water for Life*, Executive Summary (n.p.: Unesco Publishing and Berghahn Books, 2003), p. 10.
- <sup>3</sup> "Fresh Water Supplies Dwindling," *The Age* ([www.theage.com.au](http://www.theage.com.au)), *Fairfax Digital*, 5 Mar. 2003. Cited on 28 April 2006, ([www.theage.com.au/cgi-bin/common/articles/2003/03/05/1046826430073.html](http://www.theage.com.au/cgi-bin/common/articles/2003/03/05/1046826430073.html)).
- <sup>4</sup> Peter Gleick, *Dirty Water: Estimated Deaths from Water-Related Diseases 2000-2020* (Oakland, Calif.: Pacific Institute for Studies in Development, Environment and Security, 2002), p. 1, 6.
- <sup>5</sup> Gleick, *Dirty Water*, p. 4.
- <sup>6</sup> *United Nations World Water Development Report*, Executive Summary, p. 10.
- <sup>7</sup> *World Population Prospects: The 2002 Revision*, Highlights ESA/P/WP.180 (United States Population Division [[www.unpopulation.org](http://www.unpopulation.org)], 26 Feb. 2003), p. V.
- <sup>8</sup> *United Nations World Water Development Report*, Executive Summary, p. 17.
- <sup>9</sup> *United Nations World Water Development Report*, Executive Summary, p. 19. C *United Nations World Water Development Report*, Executive Summary, p. 9.
- <sup>10</sup> *United Nations World Water Development Report*, Executive Summary, p. 9.
- <sup>11</sup> "Fresh Water Supplies Are Dwindling," *The Age* ([www.theage.com.au](http://www.theage.com.au)), 5 Mar. 2003.
- <sup>12</sup> *United Nations World Water Development Report*, Executive Summary, p. 15.
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