THE HIDDEN COSTS OF DRINKING WATER AT THE OFFICE

THE DRINKING WATER AT YOUR OFFICE MAY COST MORE THAN YOU THINK.

Whether you’re paying one cent per gallon, $2 for a single-use plastic bottle or $50 per month for an under-the-sink filtration system, the hidden cost behind these price tags is staggering when one considers what’s at stake for our health and the environment.

This white paper looks behind your water’s price tag to see what it’s really costing you, your communities and our planet, while presenting an up-close look at a new drinking water solution: air water.

A price comparison of common drinking water sources, including air water, reveals that you are probably paying more than you think.

While we all drink the best water that is available to us, the water quality of common drinking water sources is questionable. An analysis of common drinking water sources at the office exposes what could be in your office drinking water.

Our analysis delves into the environmental footprint of common drinking water sources, including air water.
The average full-time employee drinks approximately 2.5 gallons of water per month at the office. Business managers typically consider the price of this drinking water to be simply the amount paid for the related water delivery system.

What most business owners and managers don’t factor into their purchasing decisions are the mounting hidden environmental, public, and personal costs behind the drinking water that we consume. Managers miss these costs because the water-borne deterioration of the health of our employees, our communities and our planet is in most cases a slow and steady process—unidentifiable in large steps, and not easily added to a Profit & Loss spreadsheet. Although well hidden, the environmental, public, and personal health impacts of common water sources are staggering, and the long-term effects are now being seen and documented worldwide.

What price tag should a business owner or office manager put on employee health or on the well-being of our communities and our environment? Business owners must decide for themselves the value of the intangible benefits of participating in a world that promotes health for our generation and future generations, but many forward-thinking companies have found clear and objective value from internal programs promoting employee health and environmental sustainability. This pro-health, socially conscious attitude, even if focused inward on employees, resonates throughout the company structure and radiates outward. Employees see it and experience increased morale, while customers see both the pro-health attitude and more engaged employees. The intangible elements of healthy water are priceless, while the tangible elements are well-known indicators of a company’s long-term sustainability and profitability.

Today’s economic challenges integrate with social consciousness in a manner that requires a new kind of thinking - one that weighs the long-term impact of our actions along with the short-term cost and benefits. Our drinking water is at the forefront of this new world, requiring us to consider the health impact of water on our employees, communities and planet when we decide where to get that water. Our drinking water decisions also can have a significant impact on the “water-energy nexus,” an emerging concept that defines where water use and energy consumption intersect and depend on one another.

The questions we face are simply growing more and more complicated as the global economy evolves and science reveals risks and damages never before understood.

Air water is a novel approach to drinking water that provides the answer to many, but not all, of the questions. At Skywell, an advanced air water technology company, we share a commitment to grow with the water challenges we all face, and to continue to answer as many of the emerging questions as we can in order to protect our generation’s and future generations’ access to clean drinking water.

Air water is a new drinking water source for the office

Fortunately, the need for new solutions continues to breed innovation. Our planet, our communities and office buildings need new drinking water solutions now more than ever.
Air water, which is derived from the air around us as the name suggests, is emerging as a revolutionary new drinking water alternative that gives people access to pure, clean drinking water with dramatically lower costs to environmental, public and personal health. In addition, air water consumers enjoy a comparable or lower purchasing cost compared to the drinking water options found in most office settings.

There are approximately 3.2 quadrillion gallons of water in our atmosphere at any one time. As the world’s population grows and our water supplies dwindle, Skywell is tapping into this source and providing a healthy, environmentally conscious alternative to other drinking water sources.

To give context to a discussion about our drinking water choices, it’s important to understand the costs - both obvious and hidden - of the drinking water we commonly consume.

We must also understand the urgent nature of addressing the water challenges facing our business communities, both locally and globally. Here are a few facts demonstrating today’s water challenges and underscoring the importance of minimizing our water footprints.

- Approximately 52% of the world’s projected 9.7 billion people will live in water-stressed regions by 2050, according to MIT researchers.
- Water will be the “next oil” in the coming century, according to the experts with the American Chemical Society, the world’s largest scientific society.
- In a 2014 study by VOX Global and the Pacific Institute, 94% of surveyed companies are facing potential physical water-related challenges; an additional 69% face water risks related to reputation.
- 58% face water risks related to regulatory issues.
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- According to the World Economic Forum’s Global Risk 2014 report, water issues were ranked as a top three global risk, and many other global risks are directly related to water problems, such as scarcity and pollution.
- Water demand will outpace supply by 2030 and will place $63 trillion of global gross domestic product at risk by 2050, according to a survey by the research group EIRIS.
- Water and energy supply are closely interlinked and interdependent, and therefore both at risk. Energy generation and transmission requires utilization of water resources, particularly for hydroelectric, nuclear, and thermal energy sources. Conversely, about 8% of the global energy generation is used for pumping, treating and transporting water to various consumers. In the U.S., several hydroelectric power plants have been forced to reduce power generation or shut down due to water shortage or high water temperatures, according to a report from The World Bank.
- Municipal water supplies are threatened by the possibility of hackers and terrorist groups launching “cyber-attacks” into our municipal water infrastructure and compromising water quality and delivery. In 2013, the Federal Bureau of Investigation learned of a regional water threat affecting four major water systems in the mid-west.
- A 2014 survey of employees concerning company’s sustainability practices, commissioned by Ricoh Americas and conducted by Harris Polls, revealed that 44% of employees would rather “be unemployed than work for a company that’s knowingly harming the environment.”

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Americans spend approximately $11 billion dollars on drinking water every year." A large percentage of which is spent on providing water to businesses and office employees nationwide.

WHEN IT COMES TO MAKING A DECISION ABOUT DRINKING WATER FOR THE OFFICE, MOST BUSINESSES LOOK FIRST AT THE OUT-OF-POCKET EXPENSE OF THAT WATER. AS THE SAYING GOES, “TIME IS MONEY,” SO ONE CAN ALSO WEIGH THE CONVENIENCE OFFERED BY VARIOUS DRINKING WATER OPTIONS, INCLUDING BOTTLED WATER, TAP WATER, POINT-OF-USE FILTRATION SYSTEMS OR AIR WATER.

BOTTLED WATER: BIG PRICE TAG, BIG HASSLES
Bottled water is notorious for being the most expensive drinking water option. Despite the convenience factor of delivery straight to the office, businesses and employees face a myriad of issues related to bottled water. Among these issues, with respect to the five-gallon water bottles, companies must deal with the hassle of storing bottles and lifting them to their dispensers. When it comes to the single-use bottles, office managers face the dilemma of how to dispose of empty bottles responsibly and conveniently; dealing with untold waste caused by consumers who consume a few ounces of water and dispose of the still largely full bottle; and additional expenses resulting from employees who take a few for the road (or the home) every day. Additionally, with the rising cost of office space, every square foot counts, and bottled water containers take up precious space, whether they are full or empty.

Here are few more facts about bottled water prices that may give you “sticker-shock.”

- Americans spend approximately $11 billion dollars on bottled drinking water every year - a large percentage of which is spent on providing water to businesses and office employees nationwide.

MUNICIPAL WATER BILLS ON THE RISE
While tap water may seem “low-cost” or even “free” compared to other options, the price of municipal water paid by end-users is steeply rising. According to a recent annual survey by Circle of Blue, municipalities are raising rates to cover the increasing expenses of infrastructure needed to deliver water. The country’s municipal drinking water infrastructure is woefully in need of repair, which translates to higher municipal water costs for businesses and consumers. Furthermore, water providers are changing their rate structures to encourage conservation by charging more per gallon for high-volume users, according to

- The National Resources Defense Council estimates that at least 90% of the cost of bottled water is used towards packaging, bottling, marketing, shipping, retailing and other expenses.

- According to the Pacific Institute, the price of bottled water is 10,000 times the cost of tap water.

- You could be paying for “marked-up” tap water in your bottled water. An estimated 25% of bottled water actually comes from the municipal water supply – it has simply undergone some kind of filtration. If the label reads, “drinking water” or “purified water,” chances are that it is from a municipal water supply.
the Circle of Blue study. Here are just a few of the real and rising costs associated with tap water at the office:

• In 2014, the price of municipal water increased by 6% in 30 major U.S. cities and has risen by 33% since 2010.

• According to a 2012 Report Card for California’s Infrastructure, $39 billion will be needed for drinking water projects to maintain and upgrade systems over the next 20 years.

• According to reports from Water Innovations Alliance Foundation, U.S. utilities will spend almost $30 billion in 2014 on water treatment, energy, labor and operations.

As we enter the 21st century, much of our drinking water infrastructure is nearing the end of its useful life. There are an estimated 240,000 water main breaks per year in the United States. Assuming every pipe would need to be replaced, the cost over the coming decades could reach more than $1 trillion, according to the American Water Works Association (AWWA).

POINT-OF-USE SYSTEMS MAY DELIVER LOWER QUALITY WITH LOWER COST

While point-of-use or under-the-sink filtration systems may appear to be less expensive alternatives to bottled water, businesses may be compromising the overall quality of the water they provide to their employees and customers with this option. Filtered water is only as good as its source and its process, so businesses may be overpaying for filtered water that is only marginally cleaner than tap water.

AIR WATER PROVIDES AN AFFORDABLE ALTERNATIVE

Businesses and office buildings now have a new option to consider when exploring drinking water options for the office: air water. When provided by a reputable company and supplier, air water provides high-quality, environmentally friendly drinking water at a comparable or lower price than many of today’s most popular conventional options.

With the Skywell, all you need to do is plug your unit in, and it does all the work for you to produce clean drinking water for the office. It creates drinking water for only a fraction of the cost of bottled water while avoiding all of the additional expenses related to storing bottles and the hidden costs of municipal water.

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HEALTH COSTS

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AS THE WATER CRISIS AROUND THE WORLD HAS GAINED RECOGNITION OVER THE LAST FEW YEARS, RESEARCHERS HAVE RAISED SIGNIFICANT CONCERNS ABOUT THE HEALTH “COSTS” RELATED TO DRINKING FROM COMMON WATER SOURCES, AS WELL AS CONCERNS ABOUT WHAT IS ACTUALLY IN THOSE WATER SOURCES. FOR BUSINESSES, HIGHER HEALTH CARE EXPENSES AND LOWER EMPLOYEE PRODUCTIVITY CAN BE LINKED DIRECTLY OR INDIRECTLY TO WATER-BORNE TOXINS AND POLLUTANTS FOUND IN CONVENTIONAL DRINKING WATER OPTIONS.

EMERGING RESEARCH HEIGHTENS BOTTLED WATER HEALTH CONCERNS

While bottled water is often perceived to be “safe” and “pure,” its quality and overall health benefits have been under increasing scrutiny. New research is continually emerging that reminds consumers to consider their water’s potential health risks.

In the United States, bottled water is under the regulatory control of the Food and Drug Administration (FDA). In practice, 70% of bottled water does not cross state lines, which makes it exempt from FDA regulations. Under current regulations, bottled water companies are not required to disclose the results of their contaminant testing. According to tests conducted by the Environmental Working Group (EWG), 10 brands contained pollutants, including disinfection byproducts; common urban wastewater pollutants, such as caffeine and pharmaceuticals; heavy metals and minerals; fertilizer residue; and a broad range of other industrial chemicals used as plasticizers, solvents and propellants.

Also, bottled water also can turn into a breeding ground for microbial flora. It’s well established that stagnant water breeds bacteria; so why wouldn’t bacteria breed in our plastic water bottles? While some bottles might contain carbon dioxide to restrict potential bacterial growth, the disinfectant residual may wear off when bottled water is exposed to elevated temperatures over a period of days/weeks before consumption.

Five-gallon containers pose other potential health risks. First, chemical residue from disinfectants used to clean the containers in between customers can remain within these bottles if not cleaned properly, adding to risk of contaminants in bottled water. Second, many office injuries occur because of the “back-breaking” effort associated with lifting the full, five-gallon water containers, which weigh 42 pounds, either into storage spaces or onto dispensing machines. If employees are lifting these on a regular basis, they risk injuring their backs or other muscles, putting businesses and employees at further jeopardy for potential workplace injuries.

Here are few other eye-opening facts about the health risks and costs of bottled water:

- Contrary to its marketing efforts, bottled water does not always come from “natural springs.” According to a study by EWG, 18% of the 173 bottled water companies surveyed would not provide information on the bottled water source.

- According to a recent study published in the journal PLoS One, German researchers have found nearly 25,000 chemicals in a single bottle of water, some of which act like potent pharmaceuticals once consumed.
• Among those found were endocrine-disrupting chemicals (EDCs), which are man-made compounds found in many plastics. EDCs have been shown to interfere with hormone functioning for a variety of organisms. BPA - Bisphenol A - is a notorious EDC that has been found in many drinking bottles, among other plastic products. Recent studies have shown that so-called “BPA-free” plastics contain chemicals that are just as bad, if not worse than BPA. These chemicals have the potential to harm DNA and interfere with hormone function.

• Health care costs associated with exposures to chemical toxins are surging. According to research released by the Mount Sinai School of Medicine in New York, the use of BPA in food and beverage containers is responsible for approximately $3 billion a year in costs associated with adult heart disease and childhood obesity.

More than 80% of US waterways are contaminated by medications, according to the US Geologic Survey.

DRINKING WATER FROM THE TAP MAY POSE HEALTH HAZARDS

A closer look at the quality of municipal water also raises major health concerns. According to EWG, approximately 14 million Americans routinely consume drinking water from groundwater and wells that contain pesticides, chemicals and pathogens.

To make matters worse, our pipes and plumbing often are polluted. This arises from bacterial colonization of pipes, connections, and faucets positioned along the channels of drinking water distribution, including the utility’s distribution system, plumbing within the building, and fixtures in the office/home. At a 2014 meeting of the International Emerging Technology Symposium (IETS), plumbing experts revealed the risks associated with building water systems and their connections to aging water systems. Building plumbing systems can serve as conduits for contaminants in water, and these contaminants can directly impact human health through skin contact, inhalation and even contribute to disease outbreaks such as SARS.

Wherever you live, drinking tap water may carry health risks. Following are a few statistics reflecting the presence of tap water contaminants within various regions across the United States:

• The Environmental Protection Agency (EPA) requires public water systems to test for approximately 80 contaminants, just a fraction of the tens of thousands of chemicals that could be lurking in municipal drinking water supplies. For example, PPH, the substance that was responsible for the 2014 contamination of water supplies in West Virginia, is one of many not regulated.

• The New York Times recently reported that traces of E. coli, a microbe carried in the feces of mammals and birds, have been found in the municipal water tanks in New York City, and regulations governing water tank cleaning or inspection are rarely enforced.

• Data from the California Department of Health website show that more than 6,500 samples from sources of drinking water supplying the city of Los Angeles were contaminated with hexavalent chromium at levels above the public health goal.

• According to a study published in Proceedings of the National Academy of Sciences by researchers from University of St. Andrews in Scotland and University of California, Santa Barbara, mercury from Gold Rush-era mining operations continues to seep into California’s water system and could worsen with climate change.

• More than 80% of US waterways are contaminated by medications, according to the US Geologic Survey.
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**WATER-FILTRATION SYSTEMS CARRY HEALTH RISKS TOO**

Water filtration systems—whether they are under-the-sink or at the faucet—are often thought to be a healthful alternative to drinking tap water. However, no single treatment process can remove all substances in water, and many substances cannot be entirely removed from water once contaminated within the municipal water supply. Furthermore, if filters and holding tanks are not properly maintained, they can compromise the water quality and overall health of employees.

Also keep in mind that water treatment devices—designed to reduce chemicals from the water—should not be confused with water purification devices, which are designed to remove bacteria. Treatment devices will not remove bacteria from the water and may actually increase bacterial content when not properly maintained.

**AIR WATER GOES FROM THE AIR TO YOUR GLASS, BYPASSING THE GROUND AND PIPES**

Unlike common drinking water solutions at the office, air water, as produced by Skywell, has never touched the ground, traveled through municipal or building pipes or been contaminated by toxic substances leached into our natural waterways. It extracts water from the air and purifies it through a multi-phase process.

Skywell’s process works by taking ambient air, then cooling and condensing it, which creates water in a fashion similar to nature’s very own water cycle. To accomplish this, the Skywell uses a series of high-quality cleaning and filtering processes, each with a very specific function to ensure that that the water it produces and distributes is as pure and fresh as possible.

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A GROWING BODY OF SCIENTIFIC, GOVERNMENTAL AND ACADEMIC RESEARCH UNDERSCORES THE SIGNIFICANT ENVIRONMENTAL COST OF COMMON DRINKING WATER CHOICES. BOTTLED WATER IS BY FAR THE WORST OFFENDER, YET POINT-OF-USE FILTRATION SYSTEMS AND DRINKING WATER FROM THE TAP CAN ALSO HAVE A NEGATIVE IMPACT ON THE ENVIRONMENT.

From a business perspective, the cost may seem intangible, but in the long run it poses a significant threat to business communities, employees and customers. Furthermore, as we begin to better understand the “energy-water nexus”, which reveals the amount of energy consumed to meet our current water needs, we can see that our drinking water choices may have an exponential impact on the environment.

BOTTLED WATER’S MASSIVE ENVIRONMENTAL FOOTPRINT

Let’s start with bottled water - one of the most ubiquitous forms of drinking water. Whether you drink it from large five-gallon jugs mounted on a water cooler, or from single-use containers that most likely end up in a landfill, the hidden environmental cost of bottled water is colossal. Producing and transporting water bottles utilizes massive amounts of energy and resources.

Bottled water has perhaps the widest and largest footprint because it impacts our natural environment on so many levels. Here are a few of the ways that bottled water impacts our planet:

Carbon footprints:
- 17 million barrels of oil are used to produce water bottles annually, which is enough fuel for 1 million cars to run for 1 year. iv
- Approximately 40,000 18-wheelers are required to deliver bottled water every week. Some popular brands of drinking water are even shipped to the U.S. from foreign countries via ocean freighters. xxvi
- Plastic pollution: Plastic water bottles end up in landfills and our oceans, clogging our waterways. According to National Geographic, Americans buy nearly 30 billion bottles of water, and of these, 25 billion end up as trash that pollutes our environment.
- Water waste: In addition to the water sold in plastic bottles, the Pacific Institute estimates that twice as much water is used in the production process. Thus, every liter sold represents three liters of water.
- Environmental degradation: Many large corporations that produce bottled water extract their water supply from underground aquifers, and have a history of pumping more than their permits allow. With global warming trends, these practices threaten water resources that are essential to survival of sensitive ecosystems and watersheds.

DRINKING WATER FROM THE TAP STRAINS DIMINISHING RESOURCES

As droughts worsen and the global water supply diminishes, drinking water from tap and fountains also places demands on our shrinking water resources. The environmental footprint of drinking tap water is far-reaching and includes:

17 million barrels of oil are used to produce water bottles annually, which is enough fuel for 1 million cars to run for 1 year.
Carbon footprints:
• Our water systems and wastewater systems use roughly 75 billion KWH/year nationally - 3% of the annual US electricity consumption - which does not include energy needed to further treat, circulate, heat or cool water at the consumer level. This releases 30 million tons of carbon dioxide, the equivalent of 4 million cars.

• According to the California Energy Commission, moving and treating water uses 19% of California’s electricity and 30% of its natural gas.

• Water waste: According to the EPA, 20% of clean water is lost due to plumbing and pipe leaks, creating significant waste of a diminishing resource before it even gets to the faucet.

• Environmental degradation: Recent satellite data from the UC Center for Hydrologic Modeling shows that California is not only using its surface water reserves within reservoirs, but also is unsustainably pumping and consuming its groundwater, which serves as a safety net during drought periods. Furthermore, scientists have found a potential link between groundwater pumping in the Central Valley and seismic activity along the San Andreas Fault.

FILTRATION SYSTEMS CREATE WATER-WASTE
Filtration systems rely upon municipal water supplies — thus, they carry many of the same environmental costs. In addition, they create a negative environmental impact of their own. This includes:

• Water waste: In order to produce one gallon of ‘filtered’ water from a typical reverse-osmosis filtration system, common in many point-of-use filters, 2-3 gallons of water may be wasted in the process.

• Carbon footprints: Many purification systems consume a significant amount of electricity to continue running throughout the day.

AIR WATER WORKS IN TANDEM WITH NATURE’S OWN WATER CYCLE
Air water, as produced by the Skywell’s method of extracting water from the air, minimizes the environmental footprints that businesses create for their drinking water needs.

• An untapped source: Air water systems, like the Skywell, tap into the moisture in the air around us, and therefore do not tax our shrinking water resources or municipal water supply.

• No waste: The Skywell does not waste any water in its distillation and filtration process.

• Lighter carbon footprint: Aside from the delivery of the unit, the Skywell does not require trucks to bring in water or oil to produce plastic bottles.

Approximately 40,000 18-wheelers are required to deliver bottled water every week. Some popular brands of drinking water are even shipped to the U.S. from foreign countries via ocean freighters.
THE TIME TO CHANGE OUR WATER FOOTPRINT IS NOW

While no drinking water source for the office is perfect, the Skywell produces the most environmentally sensitive and highest quality drinking water available, and does so for a comparable or lower cost than conventional options.

In considering all of the socially responsible options available, businesses can no longer afford to ignore “hidden” costs associated with purchasing decisions. We already see a paradigm shift emerging with corporate policies and plans to curb carbon emissions linked to climate change. Our communities, our employees, our children and our environment need us to make the same shift with our water choices.

The time to change our water footprint is now, and that change can start at the office water cooler. In the long run, it will pay dividends for your company’s sustainability, profitability and employee health.
REFERENCES

1. Skywell LLC, internal company data.
12. Ibid.
13. Ibid.