

Bluewater Thought Leadership

Domestic Water Intelligence - Broadening public awareness about tap water purification at home and in workplaces



Urban Tap Water Delivery A ticking time bomb?

A white paper produced by Bluewater Group, a global supplier of residential and light commercial water purification technologies

Contents

	Page
Executive Summary	3
<p>Our drinking water is under threat from decaying infrastructures, climate change and lack of investment.</p>	
A Ticking Time Bomb	4
<p>Water is our most precious resource. Yet it will probably need something pretty revolutionary to ensure the availability and safety of urban tap water.</p>	
Fix the problem yourself	6
<p>If we cannot count on our governments to ensure there is enough safe tap water to go around, what are the options we have as consumers?</p>	
This is Bluewater	7
<p>We believe access to safe drinking water is a basic human right. That is why we work hard to innovate and make the world's best residential water purifiers.</p>	

A level playing field to make sound decisions

Our ambition at Bluewater is to give people a level playing field to make informed choices about the water they use from their taps to drink or use for preparing vegetables and cooking.

Each Bluewater White Paper examines issues relating to drinking water and outlines the technology solutions available to householders, business owners and others who seek to ensure their faucet drinking water meets wellbeing and health expectations.

Executive Summary

Few of us spare much thought to how the water spouting from our taps has gotten there. Yet existing water delivery and treatment systems around the globe, in developed and developing nations alike, are under threat from fast growing urban populations, decaying infrastructure and climate change, putting our quality of life on the line.

By 2025 the United Nations says there will be over 37 megacities globally with populations well over ten million. Four of those cities will be in North America – Chicago, Los Angeles, New York City and Washington-Baltimore. However, in most countries around the world the drinking water delivery system is growing old fast. In the USA, as much as 30 percent of pipes in systems that deliver water to over 100,000 people are between 40 to 80 years old, according to the EPA. And about 10 percent are even older.

The U.S. Water Quality Association (WQA) says ‘water that leaves the treatment facility can become contaminated by the time it shows up at your tap’. The WQA view is supported by Consumer Reports that says ‘dangerous contaminants such as lead, chloroform, arsenic, nitrate, nitrite, radon, and E. coli bacteria are common in tap water’.

The truth is that municipal water treatment plants, just about anywhere in the world, do not remove all the chemical and pharmaceutical residues that are building up in our water supply. But there are solutions – such as the innovative reverse osmosis technologies innovated by Bluewater – that are available to concerned consumers and business owners such as restaurateurs.

In this White Paper we explore the ticking time bomb of ageing water delivery infrastructures in a world of growing urbanization. And we outline what needs to be done to secure safer, healthier residential water for drinking and cooking with.



The ticking time bomb of safe urban tap water delivery

Bad water is a danger to adults and children. But discovering what contaminants are in the water flowing from a faucet is no easy matter. And while water may be leaving municipal water suppliers in relatively clean shape that is no guarantee for the safety of what's gushing from your kitchen tap.

Water is our most precious resource. Yet we are polluting it on an unprecedented scale. Every year, around the world, industry, agriculture and private citizens release huge quantities of pollutants and chemicals into our planet's atmosphere, soil and ground water. Yet very many national water treatment systems rely upon old technology dating back decades that are not designed to remove modern contaminants.

And even if those water facilities were able to guarantee the complete safety of the water they are treating, our tap water still comes to us via decaying city water delivery infrastructures that can be decades old. The unavoidable reality is that tap water quality for most of us in the industrialized world is under threat from fast growing urban populations, decaying infrastructure and climate change, putting our quality of life on the line.

In a new book published just last year, "Water 4.0: The Past, Present and Future of the World's Most Vital Resource", David Sedlak, a UC Berkeley professor of civil and environmental engineering, says a revolution is required in the way we upgrade our water supply systems.

Water 4.0 explains how we face an alarming 'array of challenges' sparked by climate change and ageing infrastructures that Sedlak believes cannot be solved without a fundamental change in our relationship to water. Certainly, if you have ever pondered what is still in your tap water after its delivery from a treatment plant, Sedlak's book opens the window and serves as a kick-in-the-pants for individuals and local and national authorities alike about how to safeguard water supplies.

With states such as California confronting epic-scale droughts, stressed water pipes, storage tanks and distribution systems deep below the cement we walk and drive along are leaking an estimated two trillion gallons of water annually due to premature pipe corrosion and breakages. According to the American Water Works Association that amounts to about one-sixth of all water pumped in the United States.

The watermainbreaksite.com website reports 850 water main breaks occur every day in North America at a total annual repair cost of over US\$3 billion. And, says the site, this doesn't include the high costs of emergency equipment, depleted water supply, traffic disruptions, and lost work time.

There is no escaping the dire truth that America's water treatment and delivery infrastructure is ageing rapidly. A sizeable proportion of America's hundreds of thousands of miles of existing water pipeline are over 100 years old, although the majority was laid during the booming 1940s, 1950s and 1960s, using cast iron, which corrodes after two to three decades.

Sadly investment in new or replacement pipeline since the nineteen sixties has not matched the growing need of expanding communities. An example came in a Denver Post news story in July 2013 that pinpointed Baltimore City, Md., which installed over 1,400 miles of water pipeline between the 1910s and 1960s, yet added just 116 more miles over the next forty years.

Water leaks out, but also – just as bad, or maybe even worse – leaks in, carrying any pollution it may have picked up outside, from chemicals to organic wastes. For example, the EPA has estimated that every year over 10 trillion gallons of untreated rainwater and melted snow pour off roofs, roads, parking lots, and other surfaces to threaten sewer systems and drinking water supplies.

In a tap water study called "What's on Tap", the Natural Resources Defense Council reported that antiquated waterworks and pollution are combining to affect the quality of drinking water residents receive Los Angeles, San Francisco and other Califor-



nian cities. The study concluded that pollution from nitrates, pesticides and chemicals from farming and industrial sources was a health concern, especially for children and pregnant women.

The fact is that while our tap water is treated to make it safer to drink, some contaminants still remain, including heavy metals, chemicals and pharmaceutical drugs. Older water works and facilities were just not designed to handle the broad spectrum of pollutants found in our source water today, even though they may meet the requirements set by the U.S. Clean Water Act of 1972.



Against this background and the gradual collapse of the water pipeline infrastructure, it is not surprising perhaps that an Associated Press study revealed the presence of a vast array of pharmaceuticals in municipal drinking water, including antibiotics, anti-convulsants, mood stabilizers and sex hormones. The AP research studied drinking water supplies in around 41 million Americans in 24 major metropolitan areas - from Southern California to Northern New Jersey.

As water quality comes increasingly under the spotlight it is perhaps not surprising that a survey earlier this year by Bluewater, a Swedish water purification brand that sells its products in Europe, North American and China, revealed a majority of American to be concerned about the quality of what was coming out of their kitchen faucets. The online survey of over 1,000 U.S. adults aged 18 to 70 years found over 55% of American men and women are concerned about the quality of their tap water, while 15.7% avoided drinking tap water altogether.

Some 40.2% of respondents said they used a water pitcher filtration device to clean their tap water, while 6.4% said they utilized an under-sink, reverse

osmosis water purification system. Some 20.8% said they relied on buying bottled water in bulk to use at home to drink, while a whopping 82% believed it is vital to their health and wellbeing to have a dedicated water purifier at home to remove practically all dangerous substances from their tap water.

“These findings are very relevant at this time as millions of Americans are living in areas suffering aging municipal water delivery systems or threatened by severe water shortages that will place an extra burden on safe water supplies,” said Niclas Wullt, managing director of Bluewater, which sells premium reverse osmosis water purifiers in the USA, China and across Europe. “Our tap water and health cannot be separated because many conditions such as heart disease and cancer have been linked to contaminants regularly found in tap water.” So how do we solve the future sustainability of our water supply when the U.S. Water Quality Association (WQA) itself has noted that ‘water that leaves the treatment facility can become contaminated by the time it shows up at your tap’?

Professor Sedlak, also deputy director of Re-inventing the Nation’s Urban Water Infrastructure, believes there are signs of a confluence of factors that could usher in a new, fourth generation of urban water that he dubs Water 4.0. He explained that Water 1.0 applies to the first revolution, the aqueducts of the Roman Empire, Water 2.0 came at the turn of the 20th century with the treating of drinking water, first by filtration and later with the addition of chlorine, while Water 3.0 gave us sewage treatment plants.

In a conversation with UC Berkley Media Relations, Sedlak warned that the tough thing about upgrading water infrastructure is that it requires smart investments over a long period of time. But, nonetheless, he believes that the revolution has begun. Asked how is Water 4.0 shaping up, Sedlak replied: “Revolutions always have frontlines, and the frontlines of the water revolution are the places where the water problems are most severe. California has been on the frontlines for water recycling and is poised to take a lead on stormwater capture and use.”

And the future? Sedlak says sustaining the cities of tomorrow will require innovative conservation techniques, serious improvements to centralized water systems, and adoption of decentralized urban water systems. The billion dollar question remaining is where the money will come from?

Fix the problem yourself

The public health consequences of the world's aging municipal water delivery systems cannot be ignored. Yet the massive scale of the problem also implies there is no easy or fast fix, especially in the economic dire straights many city authorities find themselves in. So, if we cannot count on the government to fix the problem, what are our options?

There are no shortage of home water treatment devices available, but not all are created equal in their ability to remove complex contamination. Carbon-based units require frequent filter changes to avoid harmful bacteria buildup, while ceramic filters do not remove heavy metals or disinfection by-products such as chlorine and nitrates. Distillation is another option, but is not an ideal choice for removing organic chemicals. Other options include ultra violet light, KDF Copper Zinc Systems, ozone and nanofiltration.

At Bluewater, we have invested in developing our own patented second generation reverse osmosis technology, which we call SuperiorOsmosis™. Uniting next-gen design and innovation to create a revelation in water purification with optimized performance on an epic scale, Bluewater's SuperiorOsmosis™ water purification technology has been innovated with love in Sweden to generate clean water 24 hours a day as and when required, using little energy and reducing the water wastage commonly associated with traditional reverse osmosis systems by up to 82 percent.



Benefits

- Premium purification of municipal water for professional users or large homes
- SuperiorOsmosis™
- On demand water, no tank
- Stunning capacity up to 5.7 l/min (79.4 US GAL/hour)
- Slashes water wastage by up to 82% against traditional RO
- Good looking, durable design
- Easy to install
- Quick change change filter system

This is Bluewater



Innovated with love in Sweden, Bluewater water purifiers improve user quality of life and wellbeing by removing micro-organisms, pesticides, heavy metals and toxins that can find their way into drinking water to negatively impact taste and even threaten human health.

Founded in 2012, the Bluewater™ brand today comprises three water purifier product lines: Bluewater Cleone, Bluewater Spirit and Bluewater Pro.

Bluewater's two top of the line models, Spirit and Pro, utilize our patented SuperiorOsmosis™ technology that enables us to purify tap water faster, at a higher purification grade, and with less wastage of water, while the classic Bluewater Cleone model delivers best-in-class reverse osmosis water purifier.



The Bluewater Cleone defines the word 'quality' and boasts innovative design. In Italy, the first-gen Cleone is called 'The Tank' because it never breaks down, working 24/7 all year round to deliver pure, fresh and tasty drinking water. Our latest generation Cleone is just as reliable, if not more so.

Bluewater's high-end Pro model delivers the world's highest clean water flow for a residential unit of up to 5.7 liters per minute, equaling 300 liters of purified water per hour overall.

Built into both the Bluewater Spirit and Pro models, SuperiorOsmosis™ is designed to remove anything larger than the water molecule, including bacteria. It drastically reduces any microorganisms in water, although we also recommend adding an optional UV-light if the tap water is suspected to have bacteria present in it.



Bluewater's focus is on purifying residential or light commercial municipal water. However, with the right pre-filtration Bluewater technology can purify many types of water, even brackish water with TDS levels of up to 7500 PPM.

Suitable for use with just about any known faucet, Bluewater water purifier are designed to generate clean water 24/7, using little energy and reducing the water wastage commonly associated with traditional reverse osmosis systems. The frequency of filter change depends on water quality and varies from one market or area to another. In general, pre-filters should be changed every six months.

Purer, safer & healthier tap water Innovated with love in Sweden

Bluewater's patented technology has been innovated with love in Sweden for a world where everyone has the right to drink water as pure as nature intended, free of bacteria, toxic metals and pharmaceutical and chemical residues.

Bluewater SuperiorOsmosis™ technology gives you cleaner, healthier water direct from your tap. Our second-generation reverse osmosis solutions help remove just about every known waterborne pollutant harmful to human health from tap drinking water.

Turning tap water into healthier drinking water, Bluewater innovates and markets premium water purifiers for consumers and businesses in Europe, the USA, China and elsewhere in Asia.

www.bluewatergroup.com

Bluewater Group Head Office
Engelbrektsgatan 14
114 32 Stockholm
Sweden
T: +46 (0) 8-564 738 00
info@bluewatergroup.com

Bluewater China
Room 1503 City Gateway NO.398
North Caoxi Road
Shanghai, China
T: +86 21 6126 6210
infochina@bluewatergroup.com

Bluewater USA Inc.
7603 W 145th Terrace
Overland Park
Kansas 66223, USA
T: 1-844-2Bluewater
infousa@bluewatergroup.com



@BluewaterPure



BluewaterPure



BluewaterPureWater



BluewaterPure



BluewaterPure



Turning tap water into healthier drinking water