Maski, Karnataka, India - 26, March 2019 : Closeup of Child drinking water directly from corporation tap water in India | Photo by lakshmiprasada S

INTERVIEW

Safe water for all

is it possible?

Filling the gap between potable water supply and demand. Meet the inventor who is holding the key to solving the global water crisis through his state-of-the-art water filtration technology.

Click to hear the article, voiced by author Natalia Díaz & Dr. Koslow

One World Filter™

Dr. Evan Koslow

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Water filtration expert and inventor of the state-of-the-art One World Filter™ (OWF) System

Rapidly diminishing water supply combined with poor water quality have led to the global water crisis, risking the lives of millions of people in the developed and developing world. Existing water filtration technologies scarcely provide an effective solution to produce potable and affordable water, as they strip water of essential minerals and waste up to 80% of water.

Dr. Evan Koslow may just be holding the key to solving this worldwide problem. An inspiring inventor with nearly 80 issued patents and 50 patents pending, he invented the extruded carbon block for consumer water filters, which represents a nearly US$6 billion dollar industry. He is the recipient of numerous awards for filter design and contributions to the water treatment and activated carbon industries.

In an exclusive interview, Dr. Koslow tells us about his breakthrough nano-filtration technology powering the One World Filter™ (OWF) System, which aims to resolve water purity and security problems for the world's most vulnerable communities with little or no access to clean and safe water. Such innovative technology comes down to a little piece of paper capable of filtering immense amounts of water. Scalable and available at a very reasonable economic cost – about a hundred times less expensive than bottled water – the OWF System tackles two critical »

problems: providing clean drinking water to millions while reducing plastic pollution.

The OWF System is the product of nearly 40 years of Dr. Koslow's work in developing high-performance water filters. Today, Dr. Koslow's goal is nothing less than eliminating over 3 million deaths a year from contaminated water.

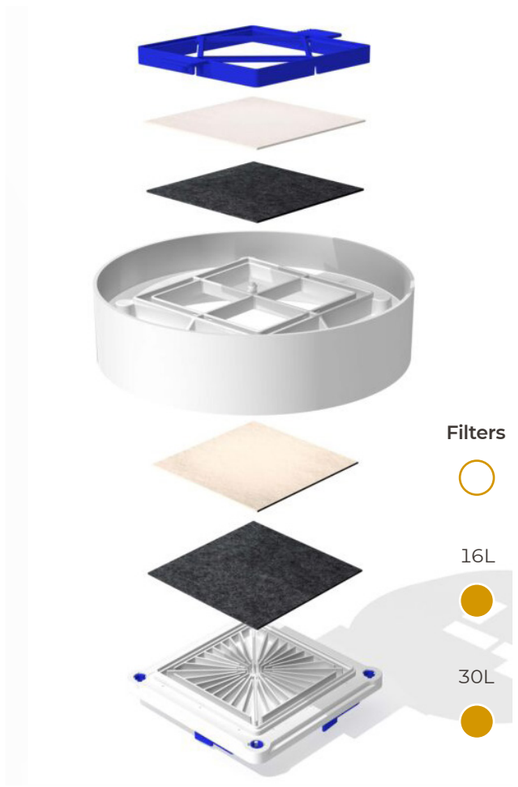
Voices of Leaders: Despite the numerous innovations which have revolutionised and transformed a range of industries, we as a society have yet to tackle one of the most glaring issues still facing our planet: clean drinking water. Why, in your opinion, is this basic issue still a major, global-wide problem?

Dr. Evan Koslow: Providing clean and safe drinking water really involves two problems. The first is supply, where in some parts of the world, there is actually difficulty obtaining water of any quality. People must sometimes travel for long distances to access a suitable water supply and they must bring this heavy and bulky water back to their homes. In many cases, the supply of water can be unreliable or seasonal.

The second problem is water quality. In many regions of the world, the quality of the water is unsafe for potable applications. It can be contaminated with a wide spectrum of contaminants or acute microbiological threats. The result is millions of people – mostly young children – killed each year by waterborne disease and enormous morbidity that prevents sick people from working and functioning. This further damages their ability to work and make a living and further impoverishes people in these regions.

"The OWF is incredibly inexpensive, which allows for its distribution and affordability to even very poor and disadvantaged populations. In addition, it can be produced at incredible volumes necessary to meet the needs of the world population."

Dr. Evan Koslow
Water filtration expert



2 first dispenser models:
Filters, OWF-GF16L Dispenser and OWF-GF-30L Dispenser

VoL: As the inventor of the OWF System that features nano-filtration technology to be able to provide clean, quality water, could you tell us how this project first came about and developed over the years?

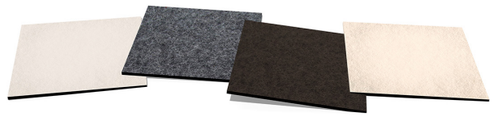
EK: The idea of the OWF emerged around 2010. It is a combination of technologies I had originally worked on all way back in the 1980s. This includes the mass production of nanofibers, combining these with powerful adsorbent particles, and a manufacturing process that combined these nanofibers with these powerful adsorbents.

The result is a single filter paper that can remove both a broad spectrum of organic toxins as well as toxic metals such as lead, mercury and cadmium. I further developed a new class of surface chemistry that greatly enhances the interception of microbiological threats so that even the smallest virus and bacteria would be quantitatively removed from water.

VoL: Could you tell us in layman's terms about the state-of-the-art OWF technology and why it is effective compared to other water filtration systems in the market?

EK: The OWF has two unique features. First, it is capable of handling organic (herbicides, pesticides, pharmaceuticals), toxic inorganic (metals), dangerous particulate (asbestos, sediment, rust, dirt) and all known microbiological threats (virus, bacterial, parasites, oocysts) in a single piece of filter medium. It performs all these tasks for an extremely long life while meeting the highest NSF (National Sanitation Foundation) International standards.

Second, the economics of the OWF and the ability to scale production to enormous volumes is also unique. The OWF is incredibly inexpensive, which allows for its distribution and affordability to even very poor and disadvantaged populations. In addition, it can be produced at incredible volumes necessary to meet the needs of the world population. Production can easily achieve hundreds of millions of filters per year and can be further scaled to billions of filters per year. Our team has developed and installed equipment that can currently produce these devices at 600 filters per minute – or ten filters per second. It is one of the only technologies that can be scaled to this level at reasonable economic cost.



OWF-GF1 Fiilter Pack (3 filters) | OWF-GF2 Filter Pack (4 filters)

A OWF device is certified using NSF International test protocols to meet the standards for the control of trace metals and the following ones:

NSF Standard 53 | NSF Standard 401 | NSF Standard P231 | NSF Standard 42 Class 1 particulate reduction

The OWF also handles aesthetic issues of dirt, rust and sediment, and control of chlorine, taste, and odour (beyond detection when tested in accordance with NSF Standard 42).

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VoL: The World Economic Forum (WEF) estimates that, by 2030, there will be a 40% gap between global water supply and demand if we follow business-as-usual practices. Given your experience in water filtration, what are the key challenges that still need to be overcome to address this gap?

EK: The majority of the world water deficit relates to industrial and agricultural use of water and not the production of potable water. For example, potable water consumption is quite modest compared to that required to support agriculture in most regions of the world. The key problem in many cases is how water is priced and maladroit policies that encourage unproductive water use and waste. In addition, a failure to control water pollution results in many valuable water resources being contaminated to such a degree as to make them useless for many critical applications. The key here is improved water management policies and better water resource management as well as the implementation of technologies that conserve water and protect water quality. In many cases, if such policies could be established, local water resources would be sufficient to support the local population and economy.

VoL: New technologies are providing breakthrough solutions to common water-management challenges by unlocking a wealth of previously unobtainable data about »

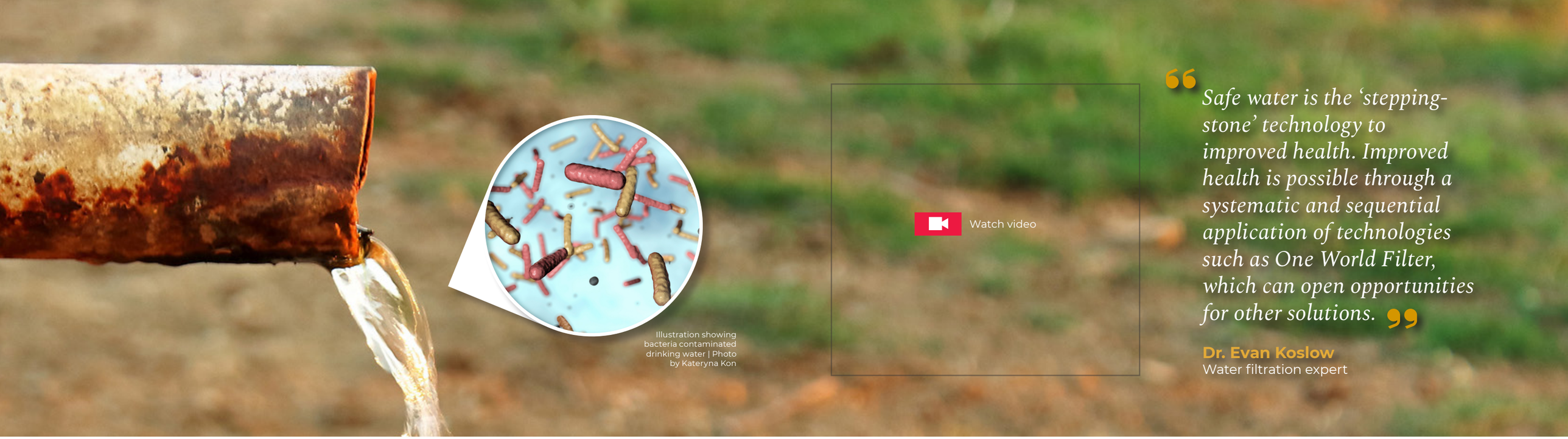

Illustration showing bacteria contaminated drinking water | Photo by Kateryna Kon

Watch video

> *Safe water is the 'stepping-stone' technology to improved health. Improved health is possible through a systematic and sequential application of technologies such as One World Filter, which can open opportunities for other solutions.*
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> Water filtration expert

Shortage of drinking water | Photo by Vadzim Mamedau

the health of water systems at the global, regional, and local scale. What opportunities does this previously unavailable data present to researchers and scientists like yourself in the area of water filtration?

EK: In the past, it has been very difficult to accomplish effective water management because key defects in water distribution and treatment systems were undetectable. With modern sensors and computers, these leaks can now be tracked down and remediated leading to greatly enhanced water conservation.

Similar approaches can be used to optimise water used for agriculture using satellites and drones fitted with sensors that can monitor water deficits over wide areas and provide water in a highly optimised manner. Water reuse can also be accomplished using improved waste water treatment systems. Reduced use of fuel, fertilizers and pesticides can be accomplished using improved agricultural methods. This reduces water contamination and run-off.

Technology indeed has a major role to play, but without improved policies and correct pricing of water resources, these technologies are only a partial answer to addressing global water problems.

VoL: Technology clearly plays a big role in tackling the issue of water security. What areas do you envisage technology being further used in tackling this crisis?

EK: Declining water supply and water quality combine to create a nearly global water crisis. This crisis is not confined to less-developed regions, but is reaching a critical stage in Australia, western and mid-western United States, wide regions of China and other advanced economies. To enhance water supply, it is likely that a combination of renewable energy, such as solar energy, can be combined with well-established desalination methods such as Reverse Osmosis (RO) or capacitive deionization to continuously recycle and produce potable water.

The use of fossil fuels to drive this process would only shift a water problem into an equally serious global warming problem. Each technology, alone, cannot address these problems. Instead, it is the adroit application of technology clusters that makes a truly revolutionary change possible. Even land reclamation and desertification can only be

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reversed through the application of several technologies, combined with national and international policies that apply market forces and fully capture the external costs of pollution, resource depletion, and climate change.

VoL: What legacy would you like to leave behind from your work as the inventor of the OWF System and one of the key members of the OWF Project?

EK: My job, my company's mission, is to provide critical tools for people to manage water quality at both a very personal level – individual families – and also at a community and national level. These tools are one of the means required to carry out effective national and international policies to better conserve and protect water resources.

OWF can save millions of lives and alter the economics of whole nations because fatalities and morbidity combined can cause billions of dollars of losses and great human tragedy. However, these technologies can only provide such relief if we apply the required financial resources and national policies. It is estimated that insufficient potable water causes approximately US$90 billion of annual direct economic losses. However, the deployment of a technology like OWF would cost only about US$1 billion a year. There are few investments with such an enormous potential return on investment.

Safe water is the "stepping-stone" technology to improved health. Improved childhood development and health can provide benefits into adulthood thanks to improved health, nutrition, brain development, and immune strength. All of this is only possible through a systematic and sequential application of technologies such as OWF, which can open opportunities for other solutions.