TECHNOLOGY

UC Berkeley team tests portable harvester device to pull water out of air

By Dan Ashley and Timothy Didion

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A UC Berkeley team tested an experimental device on the Death Valley floor that is best described as a portable water harvester.

BERKELEY, Calif. (KGO) -- If you ever find yourself searching for water in the middle of Death Valley, you're probably in a lot of trouble. But for Zach Zheng and his colleagues Ali Alawadhi, and Woochul Song from U.C. Berkeley, it was just part of the challenge.

"We decided to take the biggest challenge, which is go to the center of the park, the Furnace Creek, you know, the, the most challenging part and then so, we were very lucky," says Zheng.

Lucky, in part, because they didn't arrive empty handed. The team set up an experimental device on the valley floor that is best described as a portable water harvester. It looks something like small telescope tilted at an angle. But its purpose is to pull water out of the air. In this case, the hottest and driest air they could find for their test.

"I was very excited. So I just stay there, even though it's super hot. So I just wanted to watch it, he adds.

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These are challenges the Bay Area faces in eliminating 'forever chemicals' in our water, according to local experts.

To understand his excitement, it helps to take a quick detour from the desert to the lab.

That's where U.C. Berkeley Professor Omar Yaghi, Ph.D., pioneered the water capturing ingredient at the heart of the device. A synthetic material known as a MOF, for metal-organic frame work. While it looks like a powder to the naked eye, put it under the right microscope and you'll see a chain of molecules.

Prof. Yaghi explains that the specialized molecules are extremely porous, with a surface area roughly the size of a football field in just a small amount.

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"So, that's the space into which one can bind gases like hydrogen for hydrogen storage, carbon dioxide, carbon from the air, or in this case, water," he says.

"The amazing thing is that we can even go into these on a molecular level and surgically add chemical groups or take away chemical groups to fashion the interior of the pores, so that they can selectively seek out water from the air and trap it and concentrated into the into the pores."

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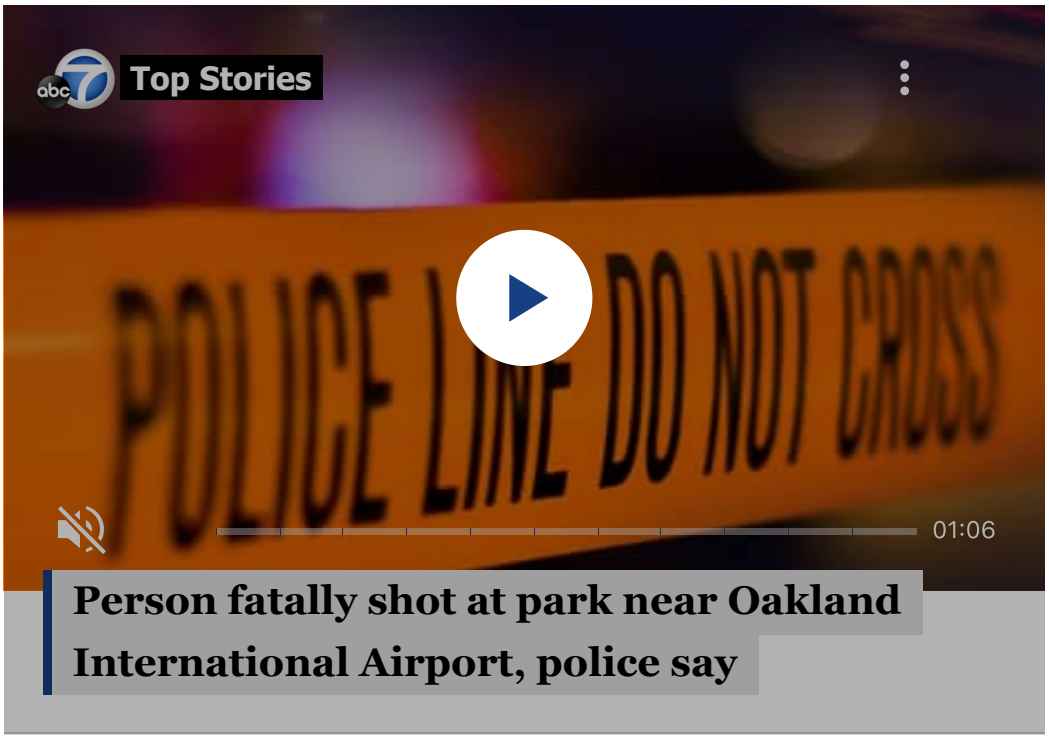
Epic Cleantec is harnessing the used wastewater from San Francisco high-rise buildings in what could be the future of recycled water.

But the question for Zach and his colleagues was whether the portable device would be efficient enough to condense water molecules from the hyper-dry desert air. So in the baking sun, they watched and waited for the first tiny drops to appear.

"Until it finally just dropped out, he says. "And it took about 60 seconds or so, I saw the drop is out and said, Oh, it works!"

The Berkeley team says the MOF-based system is different than other clean water technologies because it can be completely powered by ambient sunlight, and produces no emissions.



With the latest results, they hope the water harvester can impact populations in the most drought stricken corners or the planet. Providing clean, safe and potentially lifesaving drinking water pulled from thin air.

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