

This new technology converts sea water into drinking water in minutes

David Nield, Science Alert, 9-15-15

Purifying dirty water is a notoriously difficult and expensive process - even in California, financial pressures affect what can be done to tackle the severe drought in the area. Those in developing nations have far less money to play around with, which is why a newly invented and ultra-cheap water cleaning process is looking so promising.

Developed by a team of researchers at Alexandria University in Egypt, the procedure uses a desalination technique called pervaporation to remove the salt from sea water and make it drinkable. Specially made synthetic membranes are used to filter out large salt particles and impurities so they can be evaporated away, and then the rest is heated up, vapourised, and condensed back into clean water.

Crucially, the membranes can be made in any lab using cheap materials that are available locally, and the vaporisation part of the process doesn't require any electricity. This means the new method is both inexpensive and suitable for areas without a regular power supply - both factors that are very important for developing countries.

The technique not only desalinates the seawater, it's capable of removing sewage and dirt from it too. The researchers combined expertise in oceanography, chemical engineering, agricultural engineering and biosystems engineering to come up with the solution, and their work has now been published in the journal *Water Science and Technology*.

"The technology implemented in the study is much better than reverse osmosis, the technology currently used in Egypt and most of the countries in the Middle East and North Africa," Helmy El-Zanfaly, a professor of water contamination at Egypt's National Research Centre, told Scidev.net. "It can effectively desalinate water with high concentration of salt like that of the Red Sea, where desalination costs more and yields less."

Unfortunately for those who are waiting for this type of technology, a lot of work is required before it can be put into action: the academics working on the project have to set up a pilot test that proves their theories correct on a large scale. There's also the issue of how to deal with the waste produced from the process.

What's certain is that a new procedure like this could have a huge impact on the lives of millions of people - according to Water.org, some 750 million people across the globe don't have access to clean drinking water, a problem that's responsible for around 840,000 deaths every year - more than the entire population of San Francisco.