

Shedding light on hidden germs

NTU team uses lasers to identify pollutants in water

SHINE a light on water to expose bacteria hiding in it – that is the idea behind a new invention from Nanyang Technological University (NTU).

A team of scientists has come up with a laser-based system to ferret out water contaminants. It says its method is eight times cheaper and seven times faster than national water agency PUB's filtration system.

Currently, the PUB takes samples from its treated water, filters them and uses chemicals to identify any contaminants. This takes seven hours and can detect a single bacteria cell in a standard 10-litre sample.

The NTU scientists said their method is just as accurate and takes only one hour. Their machine forces water through a channel the width of a few human hairs and shines lasers through the channel.

If there are any contaminants in the water, they distort the light and the change is recorded on a sensor.

The scientists said each type of contaminant produces a signature distortion. They plan to build a database of pollutants such as cryptosporidium and giardia – bacteria that can cause diarrhoea – so the system can automate the identification process.

PUB said it will test the product in its laboratories.

Project leader Liu Ai Qun, deputy director of the NTU School of Electrical and Electronic Engineering's Valens Research Centre, said the method is cheaper than filtration as

it does not need chemicals or laboratories manned by specialists.

The machine consists mainly of glass, polymers and wires.

"This machine can help water agencies worldwide when they need to perform tests and diagnostics of their water supply," he said.

Professor Liu estimated that the commercial product will cost \$15,000. The scientists will set up a company by June to market and further develop the machine.

The project has received \$1.77 million in funding from the Environment and Water Industry Programme Office – an inter-agency effort comprising the PUB, Economic Development Board and International Enterprise Singapore – set up in 2006 to support water technologies in the Republic.

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