Scientists trying to solve lead mystery

Singapore-MIT research team finds unexpected lead isotope in sea here

By DAVID EE

SCIENTISTS are trying to discover the cause of an unusual type of lead content found in the sea around Singapore.

A team from Singapore-MIT Alliance for Research and Technology (Smart) has been measuring levels of lead in the sea here since 2010, when it began drilling coral – which indicate lead levels over the last 60 years – off local shores.

They expected to find a type of lead pollution matching that found in the air – mainly residual contamination from leaded patrol, which was phased out here in 1998. Instead, it found a completely different lead isotope, or variety, at levels five to 10 times higher than in an uncontaminated area.

Such levels are still harmless to humans and marine life, though principal investigator Professor Edward Boyle believes the isotope could point to a pollutant originating here or from neighbouring countries.

Possible sources include lead paint used on old ships, lead used in car parts and batteries or in industrial effluent washing into the sea over decades.

Another possibility is a natural source. Tests on mud in MacRitchie Reservoir found naturally occurring lead matching the mystery isotope.

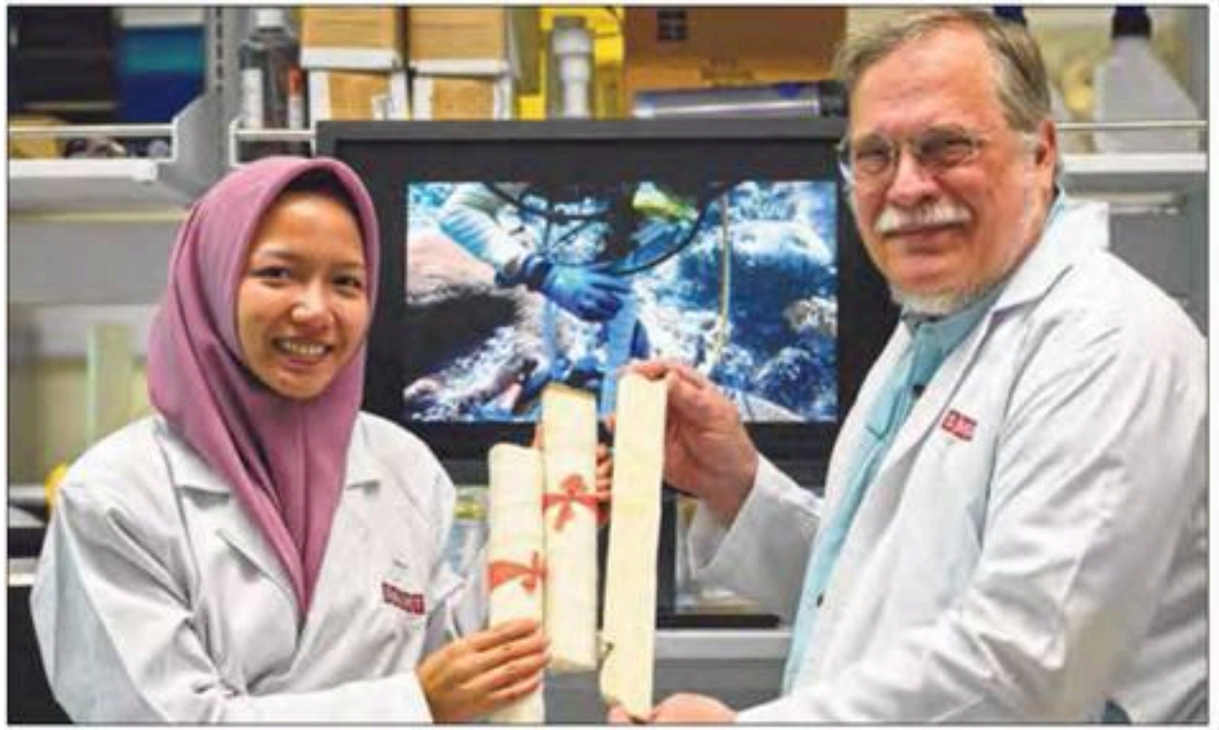
The team of five researchers will spend the next few years trying to identify or rule out pollution sources, by taking water samples from drains, canals and rivers – including the Singapore River.

"We have a real mystery," said Prof Boyle, who is also a professor of geochemical oceanography at the Massachusetts Institute of Technology (MIT) in the US.

"It's very much an open question what that extra source might be."

Illegal dumping is a possibility, he added.

Since leaded petrol was phased out here, levels of lead in the air have fallen dramatically to well within World Health Organisation (WHO) guidelines. Lead is classified as a hazardous waste by the Government, which regulates and monitors its collection, treatment and disposal.



Dr Intan Suci Nurhati, Smart senior post-doctoral associate, and Professor Edward Boyle, the Smart research team's principal investigator, holding coral samples which indicate lead levels. ST PHOTO: MARK CHEONG

Smart's work is part of a global study led by MIT to trace lead pollution in oceans.

The team drilled coral samples off Pulau Jong as well as Hantu, Kusu and Semakau islands in the south. Like tree trunks, coral forms ringed layers as it grows. This allows scientists to measure how lead levels in each layer have changed over decades, leading them to this perplexing finding.

Their work will last until at least 2018 and cost about $1.6 million – funded by the National Research Foundation. The research was published in this month's issue of the Earth and Planetary Science Letters journal.

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