

Toxic bacteria found on plastic trash

The bacteria, which can cause coral bleaching and wound infections, were found on rubbish picked up around Singapore's coastline

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Toxic bacteria capable of causing coral bleaching and wound infections in humans have been found on microplastics picked up from Singapore's coastline between April and July last year.

Marine scientists at the National University of Singapore (NUS) found more than 400 different types of bacteria on 275 pieces of microplastics collected from three beaches – Lazarus Island, Sembawang Beach and Changi Beach.

The plastic items were smaller than 5mm each.

During this six-month study, the team attempted to examine the bacterial communities on microplastics collected from coastal regions of Singapore.

Using DNA sequencing, the scientists found the bacterium *Photobacterium rosenbergii*, often associated with coral



NUS doctoral student Ms Emily Curren examining microplastic samples collected from coastal areas of Singapore. PHOTO: NATIONAL UNIVERSITY OF SINGAPORE

bleaching and disease.

The research team also found species of marine *Vibrio* – known to be a major cause of wound infections in humans – and species of *Arcobacter*, a bacterium known to cause gastroen-

teritis.

The team consists of Dr Sandric Leong, research lead and senior research fellow at the NUS Tropical Marine Science Institute, and Ms Emily Curren, a PhD student at the institute

and the Department of Biological Sciences at the NUS Faculty of Science.

Ms Curren said: “As the microplastics we studied were collected from locations easily accessible to the public and in areas widely used for recreation, the identification of potentially pathogenic bacteria is important to prevent the spread of diseases.”

She added that the microplastics originated from disposable forks, spoons and straws, which can take hundreds of years to biodegrade.

There are currently more than 150 million tonnes of plastics in the ocean, said the researchers.

These bits and pieces of plastic become “vehicles” for the toxic bacteria to thrive. When accidentally swallowed by fish, mussels and shrimp, the researchers say, these harmful

bacteria could find their way up the food chain – to humans.

Dr Leong said: “Microplastics form a large population of plastic pollution in marine environments.

“Marine organisms may consume bits of microplastics unintentionally and this could lead to the accumulation and subsequent transfer of marine pathogens in the food chain.

“Understanding the distribution of microplastics and identifying the organisms attached to them are crucial steps in managing plastic pollution on a national and global scale.”

But toxic bacteria are not all that are found on microplastics.

Species of the bacteria *Erythrobacter*, capable of degrading plastic, and *Pseudomonas veronii*, used to clean up oil spills, were also found.

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