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NUS team wants to know algae better

Study focuses on cyanobacteria, which gives water a greenish tinge

On the NUS team working with PUB to study cyanobacteria are (from left) research engineers Nur Hazimah Mohamed Nor and Derrick Low, Associate Professor Karina Gin, research assistant Boo Chek Yin and research fellow Te Shu Harn. ST PHOTO: TIFFANY GOH

By CAROLYN KHEW

ALGAE blooms may have been in the spotlight recently for their devastating effects on fish farmers but they can also affect the water in reservoirs here.

This is why a group of experts has been working with national water agency PUB to better understand a type of algae called cyanobacteria, which can produce odours or cause water to have a greenish tinge.

The team from the National University of Singapore (NUS), led by Associate Professor Karina Gin from the Department of Civil and Environmental Engineering, is conducting a five-year study on the issue. It aims to understand better the different types of cyanobacteria found in fresh water and the conditions that cause them to multiply.

While the algae can be removed during the water-treatment process, they can lead to decreased water clarity and lower dissolved oxygen levels, which can affect aquatic life.

"The study focuses on cyanobacteria because they tend to dominate tropical freshwater systems," said Prof Gin.

She added: "So far, no other algae are known to produce the off-flavours, although there are some bacteria which can. Other algae species can turn water green too... It's from the chlorophyll pigment found in plant cells."

Off-flavours are non-harmful chemicals that cause the water to have an "earthy or musty smell".

Prof Gin said: "The reasons why they are produced by cyanobacteria are not fully understood, but they are believed to be a form of self-defence for the algae."

Over the last two years, the team has, among other things, conducted monthly field surveys of Marina and Upper Seletar reservoirs, tracking the levels of chemicals and off-flavours produced.

About 80 cyanobacteria species have been isolated so far. These are being used to study the amount of chemicals they produce under various environmental conditions, such as light.

One of the team's findings is that besides odours, some cyanobacteria produce "pleasant-smelling chemicals" that can be used in perfumes.

When contacted, a PUB spokesman said that while the naturally occurring algae are generally present in raw, untreated water, they are effectively removed during the water-treatment process and have no impact on the safety of drinking water.

Nonetheless, the study will enable the agency to know more about cyanobacteria so that detection tools and models can be developed to manage them better.

"When these models can be potentially developed will depend on the study results," she added.

kcarolyn@sph.com.sg