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Heavy rain likely led to algae bloom that turned water purple at Sentosa

Fish could have died due to low oxygen from algae's respiration or clogged gills

Investigations into the fish die-off and pinkish-purple colour of the Sentosa South Cove waterway earlier this month have found that it was caused by the recent weeks' heavy and persistent rainfall that altered water conditions.

Water samples tested had low levels of salinity and dissolved oxygen, which may have led to the dead fish seen in the waterway banks from Jan 6 to 9, said the Sentosa Development Corporation (SDC) and National Environment Agency (NEA) in a joint statement yesterday.

The algae bloom that changed the colour of the waters was likely triggered by a high nutrient level and organic content in the water, NEA added.

Sentosa Cove residents first noticed a foul, sewage-like smell from the waterway on Jan 5. This was followed by the dead fish and the waters turning shades of plum from Jan 12.

SDC and NEA, together with Sentosa Cove Resort Management (SCRM), studied water samples collected between January 6 and Jan 13.

The National University of Singapore's Tropical Marine Science Institute (TMSI), which was tapped by SDC and SCRM, found high amounts of pico-cyanobacteria – a form of algae – in the water samples.

The waters in the Sentosa South Cove waterway turned pinkish-purple from Jan 12. TNP FILE PHOTO

The colour of the bloom depends on the species of the algae form and their pigment composition, and the algae bloom could have occurred even before the visible change in the colour of the waters, the SDC-NEA statement said.

In line with what experts told The Straits Times in earlier reports, TMSI's evaluation suggests that the fish could have died from the low level of oxygen caused by the cyanobacteria's respiration or decomposition, or suffocation because of gill clogging.

The statement added another possible cause – irritation caused by the algae bloom.

The unpleasant odour of the waters was likely from decomposing fish, said the statement.

RAINFALL

TMSI senior research fellow Sandric Leong said heavy and regular rainfall causes the salinity of sea-surface water to decrease and may cause high-nutrient run off from land into the waterway. Rainwater, he said, was also a source of nutrients.

In response to queries, a spokesman for SDC said that surface run-off from the Sentosa Golf Club did not drain into the waterway, altering water conditions.

"As part of irrigation design, surface run-off from the Sentosa Golf Club's courses does not drain into the South Cove waterway. The lakes and fishes at the courses have also remained unaffected," she said.

– THE STRAITS TIMES