

Find out more about why algae occurs

Water Quality in Reservoirs: Minimising pollutants from the catchment is important for maintaining good water quality in water bodies. Nutrients from sources in the catchment (e.g. from pet waste, food waste, fertilisers, detergents and sediments, etc.) can have an impact on the aquatic ecosystem. These nutrients are food for algae which are microscopic aquatic organisms. When these nutrients are available and when conditions are favourable, such as warm water and sufficient sunlight, algae may grow rapidly.

Why Algae Occur



Why does water in our reservoirs or waterways look green sometimes?

This is likely due to the presence of algae.

What are algae?

Algae are microscopic organisms which are naturally present in reservoirs and waterways. They are an essential part of all freshwater ecosystems as they form the base of the food web. Algae may grow in different forms. Those floating in the water are known as suspended algae (or planktonic algae) while those that grow in hair-like clusters and mats in shallow areas are usually known as attached algae (or benthic algae).

To learn more about algae, click [here](#) to watch the video.

Why do algae occur?

Algae grow rapidly in the presence of favourable conditions, such as warm and calm water, sufficient sunlight and nutrients.

When algae die, the decomposition process consumes dissolved oxygen which decreases the dissolved oxygen levels in the water, and releases nutrients back to the water, allowing constant regeneration of algae under favourable conditions.

How do algae make the water look green?

Chlorophyll, a photosynthetic pigment in algal cells used to make food, gives the water a greenish tint. At night, when no photosynthesis takes place, some suspended algae will move up to the water surface so that they may capture light and photosynthesize when the sun rises. This is why suspended algae are usually more visible from the early morning to the mid-afternoon. Suspended algae also tend to concentrate at the surface of calm waters. At times, wind blowing in a particular direction will cause the accumulation of algal cells. Therefore, at certain shores or canal edges, algae may appear as a concentrated green layer, known as scum. The scum may resemble green paint.

Attached algae may also be observed as dark green patches attached to the sediment or floating in shallow parts of the water.



Suspended algal scum



Attached algae

How do we monitor algae growth?

Water quality is monitored closely through real-time water quality sensors in the reservoirs and major waterways. PUB regularly collects samples for analysis of the dominant species of algae and chlorophyll levels.

How does water treatment remove algae?

Algae are removed effectively during the water treatment process. Reservoir water is conveyed by pipelines to the waterworks where it is chemically treated, filtered and disinfected. Chemical coagulation and flocculation and rapid sand filtration or membrane filtration are effective in the removal of suspended particulate matter including algal cells in the reservoir water. The filtered water is further disinfected with chlorine or ozone as an additional step to ensure that the water is safe. The treated water goes through a series of water quality tests before it is piped to the customers. Singapore's drinking water is well within the World Health Organisation drinking water guidelines.

Click [here](#) to watch video on the water treatment process.

What impacts do algae have?

Besides aesthetics, algae may affect the ecology. When they decompose in large numbers, dissolved oxygen is consumed, affecting aquatic life. Sometimes, the low dissolved oxygen concentrations may cause fish to surface for air. When the dissolved oxygen is extremely low, a large number of fish may die.

What should water activity participants do when they see algal scum or attached algae?

Skin contact with algae may cause itch or skin irritation. Water activity participants should avoid paddling into areas where suspended or attached algae are observed, as paddles may get entangled with the mats and splashing may occur in algal scum areas.

Water activity participants who accidentally come into contact with algae should wash the areas of contact immediately. If there is algae on their clothes, boats or paddles, participants should rinse it off with water and avoid direct contact.

How do we manage algae growth?

PUB carries out measures to control algal growth in reservoirs and waterways. These include removing algal scum and benthic algae, and working with NEA's Department of Public Cleanliness to clean our waterways daily. The removal of algae also helps to remove nutrients from our water bodies. PUB carries out research on algae to look into enhanced monitoring tools and ways to manage algal growth.

Some activities in the catchment add nutrients to our water, thus contributing to algal growth.

[Download](#) brochures on how you can play a part in Keeping Our Waters Clean.