

- Eutrophication is when the presence of excessive nutrients enriches waterways, leading to abundant algal growth.
- Algal bloom describes the green colouration that develops in lakes and rivers as a result of the excessive growth of cyanobacteria and algae.
- Algal blooms result from water that is polluted with excessive amounts of nitrogen and phosphorus nutrients.
- Sources of nitrogen and phosphorus nutrients:
 - Farm water run-off containing fertilisers
 - Effluent water from sewage treatment
 - Laundry detergent contains phosphates
- Effects of the presence of algal blooms:
 - Sunlight is blocked by excessive plant growth at the surface of the water, preventing other producers from photosynthesising.
 - Algal blooms interfere with diffusion of oxygen from the air into the water.
 - On the death of the algae, the dissolved oxygen levels in the water become severely depleted as aerobic decomposers break down their remains, affecting other aquatic organisms.
 - Once DO levels drop to near zero, anaerobic decomposers become active and foul smelling gases are released in the stagnant water.
- To protect aquatic ecosystems from eutrophication:
 - Maximum level for phosphorus is **10ppb**
 - Maximum level for nitrogen is **350ppb**
 - The levels of phosphorus in lakes and storage reservoirs must be lower than the levels of nitrogen
 - The N:P ratio of 10:1
- To monitor eutrophication, the concentrations of nitrogen and phosphorus must be measured.
- To avoid eutrophication:
 - Nutrients must be diverted from waterways
 - Absorbed by plants before they reach waterways
 - Fertilisers should not be applied before heavy rain