Environment Agency

Marine algae

We are the Environment Agency. It's our job to look after your environment and make it **a better place** - for you and for future generations.

Your environment is the air you breathe, the water you drink and the ground you walk on. Working with business, Government and society as a whole, we are making your environment cleaner and healthier.

The Environment Agency. Out there, making your environment a better place.

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The Environment Agency receives many enquires about the quality of coastal waters. Most are about genuine pollution incidents, but sometimes they relate to naturally occurring algal blooms.

This leaflet describes the characteristic features of marine algae blooms, how they affect you and what you should do if you see one.

What are marine algae?

Marine algae are natural inhabitants of seas and oceans all over the world. They include seaweeds and microscopic plants (phytoplankton) suspended in the water. Most are capable of harvesting energy from sunlight by photosynthesis to support growth.

Phytoplankton is composed of different species which may exist either as single microscopic cells or as groups, called colonies, which may be visible to the naked eye.

What are blooms?

Large numbers of algae, which cause visible discoloration of the water and accumulate near the surface, are called algal blooms. A bloom is usually made up of one species. Different species of algae bloom at various times of the year and under different environmental conditions.

There are many types of marine algae and the processes governing their growth are complex. The species present and their abundance are influenced by the amount of sunlight, the temperature and the level of nutrients (nitrogen, phosphorus, and silica) in the water.

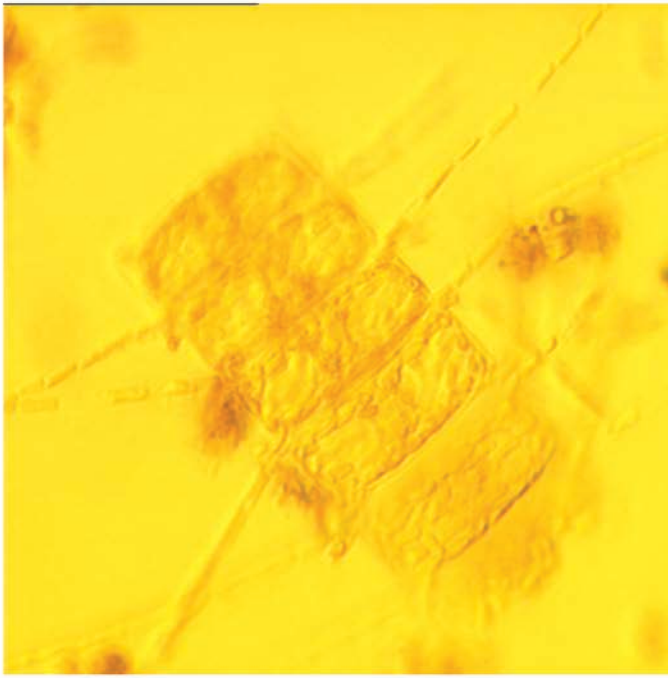
Algal populations begin to increase in spring, responding to rising temperatures and day length. Typically, rapid growth continues until the supply of nutrients is depleted or some other factor starts to limit the growth, usually during the summer months.

Large blooms can indicate an abundant supply of nutrients and ideal conditions for growth, but the interactions are complex.

Are marine algal blooms harmful?

Algal blooms can have adverse effects in the marine environment and on human activities. Certain algal species can affect fish and other marine organisms by producing toxins:

- *Gyrodinium aureolum*, has been associated with shellfish and fish mortalities, particularly in marine fish farms. This species also causes a red discolouration of the water called a red tide.
- *Chaetoceros*, have spines which can physically clog and damage the gills of fish, leading to the death of cage-reared salmon and other species.
- *Alexandrium* and *Dinophysis* can cause poisoning through the food chain when shellfish, which are then consumed by fish, birds and humans, become contaminated with toxins from ingested algae.



Chaetoceros lorenzianus

Controls to protect humans from the health implications of eating contaminated shellfish are in place through a European Union Directive. The Centre for the Environment, Fisheries and Aquaculture Science (CEFAS) monitors commercial fisheries in England and Wales for contaminants and, where necessary, takes steps to prevent shellfish becoming available for human consumption.

Decaying algal blooms can indirectly affect marine organisms by reducing the oxygen content of the water. If there's been a large accumulation of algae in shallow water, this can kill fish and other organisms such as lugworms and sea urchins.

Adverse effects are rare in our coastal waters. Blooms of non-toxic algal species are more common then toxic species.

Some non-toxic blooms are sometimes an aesthetic nuisance. The culprit is usually *Noctiluca scintillans*, which causes an orange discolouration of the water, or *Phaeocystis pouchetii*, one of the commonest bloom-forming algae in British coastal waters. *Phaeocystis* blooms form a brown, frothy scum.

Strong winds can whip this algal mass into foam which can be up to two metres thick on the surface of the water. This material is often swept ashore where it breaks down into an unpleasant brown slime, smelling similar to sewage. The smell is due to sulphur compounds which are released as the algae decompose.

What is the Environment Agency doing?

We are working to control and reduce aquatic pollution. Our principal aims are to protect and improve the environment, and to promote sustainable development.

Monitoring programmes on rivers and in coastal waters identify particular problem areas which we can then target for action. Discharges of sewage and industrial effluents are subject to regulatory controls which are gradually being tightened to improve the quality of the receiving waters.

We monitor identified coastal bathing waters between May and October. We take water samples for algal analysis, either routinely or when blooms are seen. We use this information to advise the public and take action.

What can you do?
Call us to report incidents of marine algae blooms on our **incident hotline**

0800 80 70 60 (24 hours)

Don't ignore it, report it!
To report an environmental incident, call our **incident hotline** on **0800 80 70 60** (24 hours).

Don’t use e-mail to report an incident, as this could delay our response.

Would you like to find out more about us, or about your environment?

Then call us on
08708 506 506 (Mon–Fri 8–6)

Approximate call costs: 8p plus 6p per minute (standard landline).

Please note charges will vary across telephone providers

email
enquiries@environment–agency.gov.uk

or visit our website
www.environment–agency.gov.uk

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