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Coming to a beach near you!

GCSE key words
Carbon and nitrogen cycles
Factors affecting growth

What does a gully full of wobbling foam have to do with GCSE science? Read on to find out

Above: *A view from a high headland reveals the extent of the phenomenon*

During a recent short break on the south Wales coast, I headed for the beach down a familiar gully, but found my way blocked. The gully was full of undulating, wobbling foam, to a depth of at least 2 m. The foam, forming as waves broke on the sandy beach in the bay, was being blown into deep drifts across the beach and piling up in the gully.

In the odd corner the foam was starting to dry out, collapsing to leave a thin smear of dark green powder on the sand and rocks. Beneath the powder the sand grains had been cemented together to form a firm crust up to 5 mm thick. Some of the foam was being blown up the cliffs and inland onto fields.

A foam-flecked surfer provided an explanation. There had been an algal bloom — very rapid growth — in the Bristol Channel and the algae produce lots of sticky mucilage. Hence the foam produced by the breaking waves.

Links with GCSE science

How does this tie in with GCSE science? *Human impact on the environment* is involved — extra mineral nutrient input into the Bristol Channel may encourage the sudden growth of algae producing the bloom. It also ties in with other *factors affecting growth* — in this instance a few days of bright sunshine had warmed the surface waters of the Bristol Channel. And the sudden arrival of dead algae is organic input into the **carbon and nitrogen cycles** along the coast.

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Foam lying on the beach

The internet

A quick search on the internet led me to the marvellous Environment Agency website, a useful source of information when considering *human impact on the environment*. The specific address within this site that provides details about algal blooms is:

www.environment-agency.gov.uk/yourenv/eff/water/210440/212208/

It included a photograph identifying the probable culprit, *Phaeocystis*.

Further searching led me to the website of a district council on the Devon coast of the Bristol Channel which had a press release about foam the summer before:

www.torridge.gov.uk/index.cfm?articleid=4700

Click on the download on this site to find a poster that asks the question: *algae or sewage*?

• When you are out and about let your mind play on all that you see around you and look for explanations from what you learn in GCSE science.

Mucilage holds the individual algal cells together. It is made of complex polysaccharides — chains of unusual sugar molecules.