Toxic to aliens -- but key to health of planet

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Scientists at the University of Leicester are using an ingredient found in common shampoos to investigate how the oxygen content of the oceans has changed over geologically recent time.

The same ingredient, which was also used to fight off alien invaders in the film "Evolution", is a widely available dietary supplement used by many people.

The ingredient, selenium, is an anti-oxidant and an essential trace nutrient in our diet. It belongs to a group of elements whose behaviour is controlled by the concentration of oxygen in the environment.

This study represents a first attempt by scientists to use selenium in this way and is part of research student, Andrew Shore's, PhD project. It involves measuring the isotopic ratios of selenium in sediments.

One possible outcome of the project is that the results could give scientists a global picture of the changing oxygen content of the oceans through time. Previous studies have tended to focus on local variations in ocean oxygen content.

The oxygen content of oceans can also be used as an indicator of the "overall health" of the oceans. The recent report from the Intergovernmental Panel on Climate Change (IPCC) states changes in fish populations are "associated with changes in oceanic oxygen levels." Therefore an understanding of oxygen in the oceans is not only important for the past but also for the future.

"We are using samples from an ocean basin off the Venezuelan coast which previous studies have shown to have changed its oxygen content over the last 500,000 years," explained Andrew.

Without oxygen living things suffocate. Six hundred million years ago, the only life that could survive was tiny single-celled organisms. Then suddenly 540 million years ago complex life began to thrive, possibly as the "miracle molecule", oxygen, became abundant on Earth.

Andrew added: "Our understanding of the changes in atmospheric oxygen is good, but our planet is 70% covered by oceans. Determining the oceanic oxygen content is very difficult - it is linked to the atmosphere, plankton growth, and ocean circulation patterns."

Source: University of Leicester