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**Session type:** Workshop

**Duration:** 60 minutes

**Key Stage:** KS3

**Main Curriculum Link:**

- Science: Chemistry

**Secondary Curriculum Links:**

- Science: Working scientifically
- Science: Biology

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## Session Overview

This workshop is all about chemistry in the oceans. We look at Salinity, the Nitrogen cycle, and the pH of the oceans and how these factors affect living things. We also discuss human impacts on these factors and how changes in these chemical and physical parameters could upset the balance of ecosystems.

This hands-on scientific workshop allows students to immerse themselves in a chemistry based lab session, whilst learning all about the wonders of the ocean.

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## National Curriculum Links

**Key Stage 3 Science: Chemistry – Earth and atmosphere**

- The composition of the atmosphere
- The production of carbon dioxide by human activity and the impact on climate.

**Key Stage 3 Science: Working Scientifically**

- Scientific attitudes
  - Pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility
  - Understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review
  - Evaluate risks
- Experimental skills and investigations
  - Ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience
  - Make predictions using scientific knowledge and understanding
  - Select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate
  - Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety

**To book, or for more information:**

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- Make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements
- Apply sampling techniques.
- Analysis and evaluation
  - Present reasoned explanations, including explaining data in relation to predictions and hypotheses
- Measurement
  - Understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature

### **Key Stage 3 Science: Biology – Interactions and interdependencies**

- Relationships in an ecosystem
  - The interdependence of organisms in an ecosystem, including food webs and insect pollinated crops
  - The importance of plant reproduction through insect pollination in human food security
  - How organisms affect, and are affected by, their environment, including the accumulation of toxic materials

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### **Learning Outcomes**

After this session, the groups should be able to:

- Describe salinity and how much salt is in the ocean using units (ppt)
- Explain why the nitrogen cycle is important and what chemicals are involved
- Talk about acids and alkalis and what the pH of the oceans should be
- State what equipment you would use to measure salinity, pH or ammonia in a sample of seawater

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### **Pre-Visit Suggestions**

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### **Post-Visit Suggestions**

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