

## What does Education for Sustainability have to do with Chemistry?

“We aim to change the world for the better through the excellence of our research, the strength of our teaching and our entrepreneurial outlook.”

(<http://www.southampton.ac.uk/chemistry/index.page>)

Chemistry offers routes to solutions to some of the world’s most challenging problems. Air quality that reduces life expectancy. Climate change that is impacting current generations and will affect the lives of those to come. Topic areas of relevance to sustainability already in the Chemistry curriculum include:

- **The Earth as a system:** understanding the Earth environment at present, in the past and scenarios for the future; the impact of major climatic and chemical changes on the Earth, and on people.
- **Environmental organic chemistry:** understanding the biosynthesis of the basic chemicals of life; degradation of natural organic matter, and the production of coal, oil and natural gas.
- **Environmental degradation:** predicting the behaviour of pollutants; the impact of manmade chemicals on the environment e.g. pesticides; food and water security.
- **Chemicals in the atmosphere:** understanding the Earth’s atmosphere and its interaction with other parts of the biosphere; air pollution; ozone depletion; smog; acid rain; climate change; the feedback and links between aspects of atmospheric chemistry.
- **Energy:** climate change and climate modelling; the role of chemistry in reducing carbon emissions; renewable energies; energy efficiency.
- **Chemical resources:** availability and efficient use of chemical resources in laboratories; sustainable chemical alternatives.
- **Health:** use of chemistry in human health globally.
- **Ethics:** ethical issues in research; human wellbeing and safety during research.
- **Future thinking:** modelling and projecting future changes and patterns.

**Key skills for chemists which sustainability teaching cultivates:** interdisciplinarity; informed decision-making; synthesis of different opinions, theory and data; debate and reasoning; teamwork; leadership; problem-solving; oral and written communication; self-management; time-management; critical thinking; future thinking.

**Find out more:** Contact Julia Kendal ([j.kendal@soton.ac.uk](mailto:j.kendal@soton.ac.uk)) for more information including case studies on teaching sustainability in this area.