



**University Learning in Schools**

# **Chemistry**

**The Engineer's Guide to  
Cleaning up an Oil Company's  
Mess**

## **Module Outline**

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### Module outline

**Title of Module: The Engineer’s Guide to Cleaning up an Oil Company’s Mess**

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### Module outline

**1. What is the overall topic area?**

The topic area is based on the waste water produced during crude oil refining, and the innovative techniques that are used to treat this waste.

**2. How does it link to current research and why does the researcher think this is an important topic for pupils to get to grips with?**

Petroleum waste water treatment is a costly endeavour, and research into innovative techniques to accomplish the treatment is on-going. The topic introduces pupils to process design for the sake of protecting the environment in an economically feasible way. Thus, it introduces pupils to the concept of sustainability, which is a core theme in engineering.

**3. How is this topic aiming to improve teacher subject knowledge?**

Modules for Chemistry in KS3 cover the explanation of what crude oil is, how it is refined, and how it is used. It does not cover the treatment of waste produced via the process in sufficient detail, and thus this course will build upon conventional material taught in the classroom by expanding on the crude refining process to include waste treatment.

**4. What key texts/case studies/experiments/processes are being considered?**

The key text will be a workbook designed by the pupil/teacher pair which pupils will use to complete their homework.  
Key processes in the course will be the presentation and the delivery of a powerpoint and poster.

**5. How is this topic aiming to enhance pupils' subject knowledge and improve pupil outcomes?**

The course will enhance pupils' knowledge by introducing them to the concept of sustainability in terms of environmental standards and economic feasibility. It will improve pupil outcomes by requiring them to think in a critical manner with regards to the process that they choose. They will need to justify their chosen solution to the problem with a quantitative answer, and present it with confidence during the assessment.