

Chemistry		Lesson 8: Alternative sources of energy (2 lessons)		
Curriculum Key:	AQA 12.2		OCR B C2	Edexcel topic 7
Objective(s) 1. Learn about ethanol and its use as a fuel. 2. Appreciate that ethanol is already used as a fuel in some countries.		Resources needed: PowerPoint (if desired). Pupil worksheets. Experiment apparatus and fuels.		
Starter: 5-10 minutes What is a fuel/what makes a good fuel/what fuels do we use? What's the problem, why do we need an alternative? Give facts on ethanol. A PowerPoint is provided showing some uses of alternative energies.		Teacher input/assessment Introduce the topic (if desired use the PowerPoint).		
Main Activity 1: 20 -25 minutes Can we test ethanol as fuel? What criteria would they need to apply to test it/ What would they compare it with? (e.g. HOW LONG IT BURNS FOR/energy produced (e.g. like the crisps as a fuel experiment, raising the temperature of a boiling tube of water) Carry out a practical as on the resource sheet (note safety advice in teacher notes).		Teacher input / assessment Allow the students to work safely in small groups. Circulate around the lab.		
Plenary: 15 minutes Evaluation skills - what was bad/good/is it a good alternative fuel. Class discussion of the good and bad points of the practical. Introduce the report. Consider making the report only 2 pages of A4 long. Complete next lesson. Complete reports and peer assess the report based on the marking criteria: see the worksheet for this task		Teacher input / assessment Set the scene for writing up the investigation report. Talk through the peer assessed marking criteria (this would be a good activity to pre-empt an Sc1 activity).		
Learning Outcomes: All students must: be able to recall some facts about ethanol. Most students should: be able to carry out a safe experiment to investigate ethanol as a fuel and produce a report. Some students could: produce a detailed report to evaluate the benefits and drawbacks of ethanol as a fuel				
Key Skills: Use of appropriate scientific language, safety, peer assessment Key words: ethanol, fuel, efficiency Homework: Start write up of experimental report ready for peer assessment		Differentiation: More able: will fully appreciate the need for alternative fuels and write up an accurate, concise report. Less able: will perform a safe experiment and write it up – appreciate some facts about ethanol.		