1. How do we get gas?

1.5 hours

Children create a wall display showing how natural gas is stored and piped to the mainland for domestic use. This activity sets the scene for all subsequent activities.

OBJECTIVES

- To produce a wall display, using information provided and further research; showing where gas is stored, treated and transported for end users.
- To work cooperatively.
- To begin to understand the gas storage process.

RESOURCES

(Per group of 4 children unless otherwise stated)

- Display materials, e.g. coloured paper, adhesive tape, drawing pins, blu-tac
- Activity sheets 1-4 (colour version of sheet 2 at www.roughguidetogas.org.uk)
- Access to the internet
- Role badges - see Appendix 1

ADVANCE PREPARATION

Prepare role badges before the lesson. Activity sheets 3-4 copied on to card and cut in to individual prompt cards.

INTRODUCING THE ACTIVITY

Give the children Activity sheet 1 to read and discuss the news articles. Ask them:

- *What are the articles about?*
- *What information can you gather from the articles?*
- *Why do you think it is important to collect the gas then store it?*
- *Do you understand all the terms used? If not, does anyone in your group have any ideas about what they mean?*
- *Make a list of words you are still not sure about.*

The children may put together a KWL grid (what they know, what they want to learn and what they have learned) of information about natural gas. This can then be referred to throughout the activities in this resource.

Using the energy source diagram and photographs of industry on Activity sheet 2, show the children how gas is stored, where it travels from, and the sequence of events required to transport it to domestic markets.

MAIN ACTIVITY

Organise the children into groups of four and decide on job roles, as described in Appendix 1. Each group then researches a particular aspect of the process shown on the diagram, e.g. the storage facility, gas terminal plant, power generation, etc. They then create a class display, by 'joining' sections together to represent the whole process.

PLENARY

Each group explains the purpose of their part of the process, providing opportunities for others to pose questions, and promoting discussion about how all parts of the process interact.

Revisit the list of words collated when discussing the news articles, to find out how much the children now understand.

After each activity during the project, the children can reflect on the accuracy of their display and consider how it can be improved and what information they would like to add. For example, as an activity is completed, an information sheet could be written, photographs taken or diagrams drawn, and added to the display. The prompts on Activity sheets 3-4 can be copied on to card and used as prompts during discussion. Those on Activity sheet 4 are for use at the end of the project.

AMBASSADOR ROLE

There are several ways in which an ambassador could work with a school on this activity:

1. The ambassador could be invited into school to introduce the project, using large photographs (perhaps on a PowerPoint presentation) or a DVD showing the gas storage process.
2. The ambassador may want to support the teacher by offering the children 'expert' information which will help the children complete the task they have been given.
3. Encourage the ambassador to bring resources into the classroom to aid understanding. These could include small pieces of equipment, such as 'core' and other samples, photographs and models.
4. Where time allows, and the ambassador has experience and confidence, they could lead the whole activity; introduce the project, organise the children (with teacher support) and work with the groups as they develop their display.

BACKGROUND INFORMATION

Centrica Storage operates the largest gas storage facility in the UK. The Rough gas field is 18 miles off the coast of Yorkshire and is connected to the mainland via a pipeline to Centrica Storage Easington Gas terminal. Once gas is received at the terminal it is processed and prepared for transfer into the National Transmission System (at high pressure), before entering Gas Supply Networks (at lower pressure) for use in homes and industry.

Rough was previously a gas-producing field, and it was converted into a storage facility, commencing operations in 1985. It is able to store gas in the rock strata known as Rotliegendes sandstones.

Gas storage is important to ensure security of UK gas supplies. Rough currently provides 10% of the gas required on a peak winter day.

At times of low gas demand, gas is taken from the National Transmission System and stored in the Rough reservoir. When demand for gas is high, gas is withdrawn from Rough and enters the National Transition system.

Natural gas has many uses. A commonly known use is heating, but it is also used to produce electricity and to power cooling systems.

Appendix 1: Role Badges

All of the classroom sessions involve children working together in groups of four.

Each child is responsible for a different job or role within the group and wears a badge to identify this. The images below may be photocopied onto card and made into badges, by slipping them in to plastic badge sleeves. Keep sets of badges in 'group' wallets, to be used on a regular basis in your own science lessons.

Children should be encouraged to swap badges in subsequent lessons; this will enable every child to experience the responsibilities of each role.

Administration Officer - keeps a written and pictorial record for the group.

Resources Manager - collects, sets up and returns all equipment used by the group.

Communications Officer - collects the group's ideas and reports back to the rest of the class.

Health and Safety Manager - takes responsibility for the safety of the group, making sure everyone is working sensibly with the equipment.

Where groups of 5 are necessary, the following role can be used:

Personnel Manager - takes responsibility for resolving disputes within the group and ensuring the team works cooperatively.