

SQUEAKY CLEAN

Communication Project
For Teachers **p2&3**, for Students **p4**

HEALTH AND SAFETY

Students should be encouraged to make their own risk assessment before they carry out any activity, including surveys. In all circumstances this must be checked by a competent person. Students using specialised equipment should be supervised at all times.

Students may want to set up unorthodox experiments and you may need to seek specialist advice.

Organisations such as CLEAPSS and the Royal Society of Chemistry are able to help. The MISAC (Microbiology in Schools Advisory Committee) can provide advice concerning microbiological investigations.

SQUEAKY CLEAN:

Gold Communication Project - For Teachers



Cleaning up?

Supermarkets seem to have a product for every cleaning job that you can think of, then more besides! They include a range of 'value' products, but these take up much less shelf space and are much less attractively packaged than more expensive brands. There are also products that claim to be ecologically friendly. Controlling what we put down our drains is very important if we want a sustainable future.

What is the environmental impact of domestic cleaning? - and who's cleaning up, you or the supermarket?

HAVE YOU EVER WONDERED?

...how cleaning methods used in the home can be improved to help protect the environment?

You might like to imagine yourself in a situation such as...

Environmental campaigners are trying to persuade us to change our habits and work towards a sustainable future. You have been asked by your local Friends of the Earth group to give a presentation on the scientific perspective of the most environmentally friendly ways for cleaning effectively in the home. For example, how harmful are 'value' or branded products and should we be using 'environmentally friendly' products? You agree, as long as you are allowed to put forward your best advice on the basis of the evidence, even if it conflicts with the views of

the members of the group. You need to gather relevant information, weigh up the evidence and then **use your communication skills** to:

- explain how cleaning products can be harmful to the environment
- recommend good practice that will help protect the environment
- convince people to change their current practice, if it conflicts with your recommendations.

Prompts

■ The age-group(s) you will aim at and whether they need different approaches

- Will your audience be mixed ages or abilities or both?
- Which of these might present difficulties in getting your message across?
- What different approaches could you use?

■ Can you present arguments for and against, your proposals - making it clear that the evidence supports your point of view

- What kind of facts and figures will you need?
- What are the advantages of using cleaning products over using water alone?
- Are 'green' products really greener than the others?

■ How to use a mixture of written, spoken and visual communication, including experiments, if appropriate

- What kinds of written or visual materials can you use in a presentation?
- How can you emphasise your key points?

■ Ensuring that you present scientific information, rather than emotive arguments

- How will you choose your sources of information?
- How can you make sure that you use scientific language and terminology correctly?
- Can you explain the technical terms in simple language?

■ The message to concentrate on

- What are the most important changes that you would like to see?
- What are your objectives?

■ How you will know if you have convinced people with your arguments

- How can you find out about their opinions and cleaning product preferences before and after your presentation?
- How will you know that you have achieved your objectives?

Suggestions for supporting students

In contrast to Researchers, Communicators should spend the majority of their time working on how to deliver their message, rather than information seeking.

Gold Award students are required to have an external Mentor (normally a scientist or engineer) for their project. The Mentor's role is to provide guidance and support.

Depending on the nature of the project, someone with knowledge and/or experience of hygiene practice, cleaning technologies or ecology could be ideal. The Mentor might be involved in...

- academic or industrial research in pollution, hygiene or cleaning products
- professional cleaning, for example of hospitals or schools
- environmental protection
- health education or health visiting
- ecology, occupational hygiene or environmental health.

Contact your Local Coordinator for guidance.

POSSIBLE EQUIPMENT, MATERIALS AND RESOURCES

These will depend on the presentation format(s) chosen by the student. Though primarily a 'theoretical' research project, some time could usefully be spent in the laboratory, developing demonstrations to illustrate, and explain or clarify, points to be made during the presentation.

Equipment might include materials for:

- comparison of the effectiveness of two cleaning agents
- bioassay to test antimicrobial activity or toxicity using the safe culture and incubation of micro-organisms or of germinating seeds or aquaculture of plants
- Access to media facilities

Internet search

Combine 'cleaning' with terms such as: products, green, environment, environmentally friendly, greenwashing, health, hygiene, pollution, infection control, house and domestic or try soap, detergent or surfactant. Or try:

- [New research to make shampoos and washing powder eco-friendly](http://innovations-report.com/html/reports/environment_sciences/report-28256.html)
innovations-report.com/html/reports/environment_sciences/report-28256.html
- [The chemistry of household cleaning products](http://chemistryinyourcupboard.org)
chemistryinyourcupboard.org
- [Soap](http://elmhurst.edu/~chm/vchembook/554soap.html)
elmhurst.edu/~chm/vchembook/554soap.html
- [Synthetic surfactant or soap?](http://fabrics.net/deterg.asp)
fabrics.net/deterg.asp
- [Surfactants: the ubiquitous amphiphiles, RSC](http://rsc.org/chemistryworld/Issues/2003/July/amphiphiles.asp)
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Some things to think about...

- The age-group(s) you will aim at and whether they need different approaches
- How to present a balanced argument, presenting arguments for and against your proposals
- How to use a mixture of written, spoken and visual communication
- Ensuring that you present scientific information, rather than emotive arguments
- How you will know if you have convinced people with your arguments

Health and Safety

Before you carry out any experiment:

- (a) find out if any of the substances, equipment or procedures are hazardous.
- (b) assess the risks (think about what could go wrong and how serious it might be).
- (c) decide what you need to do to reduce any risks (such as wearing personal protective equipment, knowing how to deal with emergencies and so on).
- (d) make sure your teacher agrees with your plan and risk assessment.

NOTE: Your teacher will check your risk assessment against that of your school. If no risk assessment exists for the activity, your teacher may need to obtain special advice. This may take some time.

- (e) if special tools or machines are needed, arrange to use them in a properly supervised D&T workshop.