



Safety in science at Key Stages 1 and 2





July 2009 2nd Edition



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Introduction

Teachers in Hampshire have a good record of safety through taking wise precautions when organising practical science. These guidelines aim to help schools to maintain this position. This new document replaces the previous set of guidelines: *Safety in science at Key Stages 1 and 2* issued in 2002.

In science, a key element of our work is safety. However, this does not mean creating a completely *risk free* environment for pupils. Our key principle should be to:

"Teach children how to be safe, rather than being safe for the children."

This key principle supports:

- the stay safe outcome from Every child matters
- the National Curriculum general teaching requirements:

"When working with tools, equipment and materials, in practical activities and in different environments, including those that are unfamiliar, pupils should be taught:

- about hazards, risks and risk control
- to recognise hazards, assess consequent risks and take steps to control the risk to themselves and others
- to use available information to assess the immediate and cumulative risks
- to manage their environment to ensure the health and safety of themselves and others
- to explain the steps they take to control risks."

Teachers in Hampshire have access to a wide range of safety advice through the Local Authority's membership of CLEAPSS. Schools should receive a copy of the termly CLEAPSS *Primary science and technology newsletter*, and also have access to the CLEAPSS *Helpline* on:

Tel: 01895 251496.



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CLEAPSS also produces a range of free guides which are listed in each copy of their newsletter. Many of their materials are also available via their website:

www.cleapss.org.uk .

Each term the *username* and *password* for this website are updated in the newsletter.

Hampshire specific advice is also available on the County Council's website:

http://intranet.hants.gov.uk/hrsafety.htm

and also on the Children's Services website:

http://intranet.hants.gov.uk/childrens-services/ cs-healthandsafety.htm .

This safety guidance should be used in conjunction with other appropriate Local Authority safety guidance such as:

• Off-site activities and educational visits – regulations and guidance

Author:	Hampshire County Council
Date:	January 2003
ISBN:	1-85975-6344

• Make it safe (new revised edition)

Author: The National Association of Advisers and Inspectors in Design and Technology Date: 2001 ISBN: 0-906-457-07-6

• Cooking and food activities in primary schools

Author: Hampshire Inspection and Advisory Service Date: 2009

Available only on HIAS website:

www3.hants.gov.uk/education/hias/designandtechnology/ dt-healthandsafety/dt-hs-primary.htm .

Part 1: Risk assessment

It is the legal responsibility of teachers to take every reasonable precaution to ensure the safety of themselves, pupils and colleagues. This involves identifying hazards and the risks they may present. The precise definitions of *hazard* and *risk* as used throughout this publication, are as follows:

- a *hazard* is something with the potential to cause harm
- a *risk* is the likelihood of a hazard causing harm in practice.

There are two broad stages to carrying out a risk assessment. The first stage involves the identification of the hazards and the second involves working out how the activity can be carried out so that the risks presented by these hazards can be minimised. Teachers should carry out this process in science whenever they are carrying out an activity that presents hazards.

Risk assessment is often a matter of professional judgment informed by any regulations or advice offered by the local authority (LA) or any regulations or advice offered by the scheme of work from which the teacher is working. The *Hazard Cards* associated with these guidelines set out the regulations and advice from the LA concerning hazards associated with common procedures and materials used in science in Key Stages 1 and 2. Teachers will need to consult these when carrying out their risk assessments.

Risk assessment – exposing pupils to hazards

The following statements set out the considerations that teachers must legally make in carrying out a risk assessment.

Before exposing pupils to hazards, teachers must use their professional judgment to ensure that:

- the work involving hazards is sufficiently necessary to justify the risks involved
- potential risks have been recognised, assessed and minimised
- pupils understand the risks and have been given clear instructions about proper procedures for dealing with hazards
- pupils are aware of the appropriate action to take in the event of an emergency
- appropriate actions are followed by teachers and pupils.

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Where risks are significant, the necessary actions must be recorded. Schools will need to decide whether this is best done within the medium-term planning or incorporated into lesson plans.

Activities which have a significant risk associated with them include things such as heating, burning, fieldwork, pond work, tasting, using hot water, using weights to stretch elastic bands. Guidance for making a risk assessment in these situations is given in the *Hazard Cards* provided in this publication. Additional advice may also be found in CLEAPSS guidance.

Risk assessment – step-by-step guide

The above considerations should be taken into account when teachers use the following step-by-step guide to plan and prepare for an activity in science.

Step 1: What are the hazards?

Use the *Hazard Cards* to identify the hazards in a given situation. Additional information might also be contained in the medium-term planning (for example, some schools might follow the Qualifications and Curriculum Authority (QCA) scheme, which provides information about hazards). If there is a conflict of advice, then it will be necessary to use the information provided by the LA.

Step 2: How can the activity be carried out so that high risks are minimised?

Teachers will need to consider a range of different factors in answering this question. In working out the safest way to carry out an activity, they will need to consider:

- the number of pupils involved
- the number of pupils that can safely work in the space available for the activity
- the age and maturity of the pupils
- the specific physical, emotional and behavioural needs of the pupils
- the level of supervision available
- the provision of suitable resources, facilities and protective measures given the nature of the activity, eg: sinks, sand trays, gloves

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- the quantities and types of materials that will be used
- the voltage used in electrical work.

If teachers do not have the necessary expertise to carry out the risk assessment, or to carry out the activity with their class, they should seek appropriate help.

As a result of considering all these issues, and in light of the information collected in Step 1, teachers should be able to identify the safest way in which to carry out the activity. It is this result that should be recorded in the medium-term planning as outlined above.

This will be done before the lesson starts. However, in some circumstances it will be necessary to alter this assessment when particular judgements have been made in advance that are now no longer valid. For example, the fact that pupils have returned from lunchtime in an unusual, unsettled or over-excited state might result in a change to the way in which pupils carry out a particular activity in science. An activity, which is perfectly safe on a Monday morning, may be less so on a Friday afternoon or following a wet playtime! If the teacher felt that this behaviour now presented a significant risk given the nature of the activity, then the teacher could decide to demonstrate it rather than letting pupils carry out the work themselves.

Step 3: Actively involving children in *risk* assessment

Teachers need to model this process for children, and increasingly involve them in the process. When presenting children with a new context, teachers will need to inform them of the specific hazards associated with that context. In familiar contexts, however, teachers should ask the pupils to identify the hazards. Useful questions include:

- what can we do to avoid any problems?
- what rules shall we all work to?
- what equipment might we need to use? (eg: goggles, gloves)
- what shall we do if something does go wrong?

and after the activity:

• how useful were our rules in reducing risk?

Additional guidance on involving children in thinking about risk can be found in the CLEAPSS guide L241: *Teaching health and safety in primary schools.*





Part 2: Responsibility for health and safety in science

The responsibility for ensuring the safe teaching of science is shared between the local authority, governors, headteacher and staff. Key responsibilities can be summarised as follows:

Local authority (where it is the employer)

- provide a safe and healthy working environment for staff, pupils and volunteers
- provide information, guidance and training opportunities
- issue regulations as a result of risk assessments
- monitor and review arrangements through an annual safety audit

Governors

- ensure health and safety has a high profile
- ensure that adequate time and resources are available
- monitor and review arrangements through an annual report from the headteacher
- approve the school's safety policy

Headteacher

- develop a safety culture that is in accordance with the school's policy and the LA's policy
- consult staff and ensure that they are aware of their responsibilities
- ensure appropriate training is provided, including the provision of *emergency training*
- be aware of the limits of teachers' competencies
- ensure that teachers are aware of their responsibilities and understand them
- manage resources to enable the safety policy to be implemented, including the identification of training needs



- act on reported shortcomings
- monitor and review procedures to ensure that they are in accordance with the safety policy
- report to governors annually

Science co-ordinator

- ensure that teachers understand the process of risk assessment in science, and are aware of their responsibilities (see below)
- ensure that the information needed for risk assessments is easily accessible by teachers
- ensure that when risks have been identified as significant, risk assessments are written down and reviewed
- regularly check the CLEAPSS website for up-to-date advice
- monitor and audit practice and resources
- identify training needs
- ensure that the principles of safety in science are included in the school policy
- report any shortcomings in line with the school's procedures

Teachers

- take reasonable care of themselves and others
- carry out the process of risk assessment as necessary, consulting the science co-ordinator if the risks are high
- if appropriate, try out practical activities themselves before using them with pupils
- follow the advice given in this publication and by CLEAPSS
- support the implementation of all health and safety procedures and policies
- follow the guidelines on the *Hazard Cards* to minimise risk
- ensure that other adults and pupils in the room are aware of the risks involved in the activity, and the actions that should be taken to minimise risk

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- ensure that pupils have an opportunity to discuss any hazards, and what they should do to keep themselves safe
- report any shortcomings in line with the school's procedures.

The County Council indemnifies the following in respect of civil claims for damages:

- any employee involved in the usual activities of the school
- volunteers
- student teachers and students on work experience who are under the control and supervision of the school
- governors.

This indemnity does not extend to:

- any acts that were committed whilst not engaged in an official duty
- any claim resulting from the use of private vehicles on County Council business or a County Council vehicle on private business
- any claim that results from an act which was committed in bad faith, fraudulently or was vindictive
- any prosecution or claim in criminal law, including costs of defending the same or fines imposed.

Schools who have not taken up the Hampshire County Council insurance service level agreement (SLA) should check with their own insurers as to the indemnity provided.

Additional guidance for science co-ordinators can be found in:

- A model health and safety policy for science in primary schools, CLEAPSS L224
- A guide for primary science co-ordinators, CLEAPSS L255.

Additional guidance for new and trainee teachers can be found in:

• Health and safety in primary science and technology, CLEAPSS PS22.

Contact CLEAPSS on:

Website: <u>www.cleapss.org.uk</u>

Helpline: 01895 251496.



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Part 3: Hazard guidance cards

The hazard guidance cards contain the following information:

- the broad area of study within the Attainment Targets
 - Sc2 Life processes and living things
 - Sc3 Materials and their properties

and

- Sc4 Physical processes
- reference to the relevant science units of work from the QCA's scheme of work for KS1 and 2 science
- useful safety equipment
- identification of hazards
- precautions suggested actions to minimise risk
- actions to take
- general supporting information
- additional CLEAPSS guidance, if relevant.

Card no 1	Exercise
Card no 2	Food
Card no 3	Humans – senses
Card no 4	Humans – teeth
Card no 5	Humans - tobacco, alcohol and drugs
Card no 6	Humans – organs
Card no 7	Animals – from the school grounds, visits to farms and zoos
Card no 8	Animals – <i>Pet Day</i> – pets brought into school
Card no 9	Animals – kept in school
Card no 10	Environment
Card no 11	Plants
Card no 12	Micro-organisms

Sc3 Materials and their properties

Card no 1	Testing materials for strength, hardness and flexibility
Card no 2	Rocks and soils
Card no 3	Water and other liquids
Card no 4	Thermal conductors and insulators
Card no 5	Testing properties of materials – magnetic, squashing, bending, twisting and stretching
Card no 6	Heating materials – using electrical sources
Card no 7	Heating materials – using candles and night lights
Card no 8	Burning materials
Card no 9	Mixing materials

Sc4 Physical processes

Card no 1	Electricity – appliances
Card no 2	Electricity – safety code when using mains electricity
Card no 3	Electricity – batteries
Card no 4	Electricity – circuits
Card no 5	Forces – pushes and pulls, forces and movement (KS1)
Card no 6	Forces – magnetism and springs
Card no 7	Forces (KS2)
Card no 8	Light
Card no 9	Sound

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Exercise

Links to 1998 QCA Scheme of Work Units	Useful equipment
2A	Temperature strips.
4A	Metal temperature probes.
5A	

Hazards

- To pupils with respiratory problems, such as asthmatics.
- To pupils with medical problems who may be affected by vigorous exertion.
- Infection from thermometers.

Actions - in the event of a problem

Should a pupil experience difficulty breathing, especially breathing out:

- reassure and calm the pupil
- ensure good supply of fresh air
- if the pupil has medication, allow them to take it because it may provide relief
- if symptoms persist, seek medical aid.

Precautions – suggested actions

- Identify any pupils at risk.
- Ensure inhalers are readily available before exercise.
- Judge whether such pupils can play a useful role in the learning without being subjected to undue risk.
- Use temperature strips or metal probes linked to digital sensors rather than glass thermometers.
- Where thermometers are placed in mouth, sterilise them using disinfectant solution, such as *Milton*.

Involve pupils in the process of agreeing any precautions for the activity.

General information

- Breathing do not allow pupils to hold breath or hyperventilate.
- Some pupils can be very sensitive about sharing results openly.
- Rules applying to physical activities in physical education may be necessary if the activity is vigorous.

Additional guidance from CLEAPSS

L245 – Ourselves

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc2.1

Food

Links to Work Ur	1998 QCA Scheme of nits	Useful equipment
1A	5A	Plastic gloves.
2A	6B	Hygiene posters.
3A		 Dettox (or similar) for cleaning work surfaces.

Hazards	Precautions – suggested actions
 To pupils with medical conditions. Allergic reactions to foods. 	 Identify any pupils at risk. Identify any specific food allergies. Check food labels very carefully for product content and possible health warnings. Blow noses and wash hands before commencing tasks. Involve pupils in the process of agreeing any precautions for the activity.
Actions – in the event of a problem	

Identify cause of an allergic reaction and remove from the pupil – seek medical advice in the event of a severe reaction.

General information

- Be sensitive to cultural and personal food preferences.
- See design and technology safety guidelines for food hygiene.
- Symptoms of an allergic reaction include: wheezing, coughing, skin rash, skin reddening, itching, sweating, runny eyes, runny noses, sneezing.
- Anaphylactic shock allergy to bananas, peanuts, dairy products, bakery products, etc could require immediate use of an epi pen.

Additional guidance from CLEAPSS

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc2.2

Humans – senses

Links to 1998 OCA Scheme of	Useful equipment
Work Units	oscial equipment
1A 2A	 Disposable cups, spoons and lolly sticks. Hygiene posters. <i>Dettox</i> for cleaning work surfaces or plastic tablecloths. Clean paper for covering tables.
Hazards	Precautions – suggested actions
 To pupils with medical conditions. Allergic reactions to foods. Chilli pepper and cayenne pepper can cause an allergic reaction. 	 Identify any pupils at risk. Identify any specific food allergies. Blow noses and wash hands before commencing tasks. Smelling pot tests: cover pots with muslin, and make powders into a paste. Cover cuts/broken skin. Involve pupils in the process of agreeing any precautions for the activity.
Actions – in the event of a problem	

Actions – in the event of a problem

Identify cause of an allergic reaction and remove from the pupil – seek medical advice in the event of a severe reaction.

General information

- Be sensitive to cultural and personal food preferences.
- See design and technology safety guidelines for food hygiene.
- Symptoms of an allergic reaction include: wheezing, coughing, skin rash, skin reddening, itching, sweating, runny eyes, runny noses, sneezing.

Additional guidance from CLEAPSS

L245 – Ourselves

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc2.3

Humans – teeth

Links to 1998 QCA Scheme of Work Units

Useful equipment

ЗA

• Disinfectant, such as freshly made diluted *Milton* solution.

Hazards

• Transfer of infections.

Precautions – suggested actions

- Disinfect dental mirrors.
- Use own toothbrushes.

Involve pupils in the process of agreeing any precautions for the activity.

General information

- Be sensitive to ethnic and cultural differences when discussing pupils' lifestyles.
- Petroleum jelly can be thinly smeared over lips to prevent staining from disclosing tablets.

Additional guidance from CLEAPSS

L245 – Ourselves

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc2.4

Humans – tobacco, alcohol and drugs

Links to 1998 QCA Scheme of Work Units **Useful equipment**

2A 5A

Hazards

 Dangers associated with medicines, tablets, solvent, alcohol, tobacco and everyday substances.

Precautions – suggested actions

- Discuss that pills can look like sweets and solvents like water or everyday drinks.
- Discuss why it is important not to take other people's prescribed medicines.

Involve pupils in the process of agreeing any precautions for the activity.

General information

• See: Hampshire primary drug planning, 2007 (HCC/HIAS).

Additional guidance from CLEAPSS

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc2.5

Humans – organs

Links to Work Ui	1998 QCA Scheme of nits	Useful equipment
1A	5A	• Disinfectant, such as Milton.
2A	5B	
4A	6A	

Hazards

- Transfer of infections.
- To pupils with medical conditions when carrying out pulse investigations.
- **Precautions suggested actions**
- Use posters, pictures or video clips rather than dissect organs.
- Disinfect the ear pieces of stethoscopes using, for example, freshly diluted *Milton*.
- Identify any pupils with medical conditions, including those with respiratory problems.

Involve pupils in the process of agreeing any precautions for the activity.

General information

 Be sensitive to ethnic and cultural differences when discussing pupils' lifestyles.

Additional guidance from CLEAPSS

L245 – Ourselves

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc2.6

Animals – from the school grounds, visits to farms and zoos

Links to 1998 QCA Scheme of Work Units	Useful equipment
2B 5B 4B 6A	Gloves.Trowels.Paintbrushes.Pooters.
Hazards	Precautions – suggested actions
 To pupils with respiratory problems, such as asthmatics. Pupils and teachers may experience an allergic reaction – contact with fur and feathers are known to induce an allergic reaction in some people. Bites and stings. To animal welfare. Physical risk when entering pens containing farmyard animals. Miscarriage in pregnant women when in contact with sheep or lambs. 	 Identify any pupils with medical conditions, including those with respiratory problems and allergies. Ensure inhalers are readily available. Warn pupils about hand, eye and mouth contact when handling creatures. Any pupil or adult with an open cut on their hands, with infected cuts or suffering from an infection, must not handle the animals or come into contact with them. Collect small creatures for study using a pooter or fine paintbrush to avoid harming them. Return small invertebrates collected from the environment as soon as possible. Limit the amount of frogspawn kept, and return to the same pond where originally collected before metamorphosis is complete. Check out facilities for washing hands at farms and zoos. Involve pupils in the process of agreeing any precautions for the advites of the same point and satisfies of the paint so the same point where originally collected before metamorphosis is complete.

Actions – in the event of a problem

- In the event of an animal bite, cut or sting, encourage bleeding (unless profuse) by squeezing the skin. This will help to clean the wound, which should **not** be sucked. Clean with a medical wipe.
- Identify cause of an allergic reaction and remove the pupil from the area, avoiding all further contact – seek medical advice in the event of a severe reaction.
- Should the pupil experience difficulty breathing, especially breathing out:
 - reassure and calm the pupil
 - ensure a good supply of fresh air
 - if the pupil has medication, allow them to take it because it may provide relief
 - if symptoms persist, seek medical aid.

General information

- Symptoms of an allergic reaction include: wheezing, coughing, sneezing, skin rash, skin reddening, itching, sweating, runny nose, runny eyes.
- Terrapins and tortoises may carry salmonella.
- Some species of animals are protected and should not be taken from their natural habitat.
- Considerable advice is given on health and safety in *Off-site activities and educational visits regulations and guidance,* 2003 (HCC).

Additional guidance from CLEAPSS

PS55 – Bringing pets & other animals into schools

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc2.7

Animals – Pet Day – pets brought into school

Links to 1998 QCA Scheme of Work Units	Useful equipment
2B 5B	Gloves.
4B 6A	
Hazards	Precautions – suggested actions
 To pupils with respiratory problems, such as asthmatics. Pupils and teachers may experience an allergic reaction – contact with fur and feathers are known to induce an allergic reaction in some people. Bites and stings. To animal welfare. Important: If pets are brought into school by pupils from home: each pet must be housed separately and never placed in a cage with another animal you must check animals are used to being handled, are unlikely to bite, are docile and friendly, and will not be disturbed by large numbers of excited, and possibly noisy, children. 	 Identify any pupils with medical conditions, including those with respiratory problems and allergies. Ensure inhalers are readily available. Warn pupils about hand, eye and mouth contact when handling animals. Any pupil or adult with an open cut on their hands, with infected cuts or suffering from an infection, must not handle the animals or come into contact with them. Pupils and adults must wash their hands after touching animals or cages. Limit the time animals are kept in any room where pupils spend long periods of time. Ensure room is well ventilated and adequately heated, and keep animals away from direct sunlight and draughts. Ensure an adequate supply of fresh food and water if necessary. Agree beforehand which pets can be brought to school to ensure no unsuitable animals arrive on Pet Day.
	agreeing any precautions for the

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Sc2 Life processes and living things

activity.

Actions – in the event of a problem

- In the event of an animal bite, cut or sting, encourage bleeding (unless profuse) by squeezing the skin. This will help to clean the wound, which should **not** be sucked. Clean with a medical wipe.
- Identify cause of an allergic reaction and remove, or remove the pupil from the area, avoiding all further contact – seek medical advice in the event of a severe reaction.
- Should the pupil experience difficulty breathing, especially breathing out:
 - reassure and calm the pupil
 - ensure a good supply of fresh air
 - if the pupil has medication, allow them to take it because it may provide relief
 - if symptoms persist, seek medical aid.

General information

- Symptoms of an allergic reaction include: wheezing, coughing, sneezing, skin rash, skin reddening, itching, sweating, runny nose, runny eyes.
- Terrapins and tortoises may carry salmonella.
- Budgerigars, macaws, parakeets and parrots may be infected with psittacosis.

Additional guidance from CLEAPSS

PS55 – Bringing pets & other animals into schools

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc2.8

Animals – kept in school Links to 1998 QCA Scheme of **Useful equipment Work Units** 2B 5B Gloves for handling animals and • their cages. 4B6A Gloves for cleaning animal droppings and litter. **Hazards Precautions – suggested actions** To pupils with respiratory Identify any pupils with medical problems, such as asthmatics. conditions, including those with respiratory problems and allergies. Pupils and teachers may Ensure inhalers are readily experience an allergic reaction available. contact with fur and feathers are known to induce an allergic Warn pupils about hand, eye and reaction in some people. mouth contact when handling animals. Cuts, bites and stings. Any pupil or adult with an open cut • To animals if kept in unsuitable on their hands, with infected cuts conditions. or suffering from an infection, must not handle the animals or Transfer of infections. come into contact with them. Transmission of parasites. Pupils and adults **must** wash their hands after touching animals or Important: cages. If you are considering keeping small Limit the time animals are kept in mammals in school vou **must** obtain any room where pupils spend long the document Small mammals (L52) periods of time. obtainable free of charge from Ensure room is well ventilated and CLEAPSS. The section on health and adequately heated, and keep safety and legal requirements **must** animals away from direct sunlight be read and the guidance followed. and draughts. Animals **must** be obtained from Fluctuations of temperature over accredited or high-quality sources to the weekend and holidays may be confident they are disease free. require animals to be taken home Mammals **must** be kept in during these periods. scrupulously clean conditions. Ensure an adequate supply of • fresh food and water. Steps **must** be taken to ensure mammals are well maintained and Clean cages and aquarium cannot be infected by other regularly. mammals. Involve pupils in the process of Food **must** be checked for infestation agreeing any precautions for the of beetles and moths. activity.

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Actions – in the event of a problem

- In the event of an animal bite, cut or sting, encourage bleeding (unless profuse) by squeezing the skin. This will help to clean the wound, which should **not** be sucked. Clean with a medical wipe.
- Identify cause of an allergic reaction and remove, or remove the pupil from the area, avoiding all further contact – seek medical advice in the event of a severe reaction.
- Should the pupil experience difficulty breathing, especially breathing out:
 - reassure and calm the pupil
 - ensure a good supply of fresh air
 - if the pupil has medication, allow them to take it because it may provide relief
 - if symptoms persist, seek medical aid.

General information

- Symptoms of an allergic reaction include: wheezing, coughing, sneezing, skin rash, skin reddening, itching, sweating, runny nose, runny eyes.
- Terrapins and tortoises may carry salmonella.

Additional guidance from CLEAPSS

- L52 Small mammals
- L56 Housing & keeping animals
- L71 Incubating & hatching eggs
- L124 Aquaria in primary schools: electrical safety
- L181 Cold-water aquaria
- L197 Giant African land snails
- L201 Giant millipedes
- L206 Tadpoles
- L213 Science with minibeasts: snails
- L227 Stick insects
- L257 Science with minibeasts: earthworms

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc2.9

Environment

Links to Work Ur	1998 QCA Scheme of hits	Useful equipment
2B	5B	Plastic gloves.
3B	5/6H	
4B	6A	

Hazards

- Transfer of infections.
- Tetanus and Weil's disease (from contaminated pond water).
- Falling into pond.
- Pupils and staff may experience an allergic reaction.
- Slips, trips and falls.

Actions – in the event of a problem

- Identify cause of an allergic reaction and remove from the pupil.
- In the event of an animal bite, scratch or sting, encourage bleeding (unless profuse) by squeezing the skin. This will help clean the wound, which should **not** be sucked. Clean with a medical wipe.

 Before working in a pond, identify pupils with cuts, grazes or broken skin and cover area.

Precautions – suggested actions

- Check for suitable dipping places that are not slippery or too steep. Choose a spot where the water is shallow round the edge.
- Check areas prior to visit for sharp objects, poisonous plants or contamination by animals.
- Check that pupils are wearing sturdy footwear.
- Limit amount of frogspawn kept and return to the same pond where originally collected wherever possible before metamorphosis is complete.
- Pupils and adults must wash their hands after touching animals or plants.
- Collect small creatures for study using a pooter or fine paintbrush to avoid harming them.
- Return small invertebrates collected from environment as soon as possible.
- Develop a code of practice for visits into the school environment and local sites.

Involve pupils in the process of agreeing any precautions for the activity.

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General information

- Symptoms of an allergic reaction include: wheezing, coughing, sneezing, skin rash, skin reddening, itching, sweating, runny noses, runny eyes.
- Some species of animals and plants are protected and should not be taken from their natural habitat.
- Gravel pits often shelve very quickly and the water is very deep.
- Tidal coastal areas come within the definition of open countryside regulations.
- Further guidance is given in Safety in hazardous pursuits regulations and guidance notes (HCC) and Off-site activities and educational visits – regulations and guidance (HCC). Ensure copy is still available and up-to-date.

Additional guidance from CLEAPSS

- L221 Developing & using environmental areas
- SRA08 Practical activities in the school grounds
- SRA09 Using school ponds
- PS01 Pond dipping & Weil's disease

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Plants

Links to 1998 QCA Scheme of Work Units	Useful equipment
1B4B2B5B3B5/6H4A6A	Plastic gloves.
Hazards	Precautions – suggested actions
 Pupils and staff may experience an allergic reaction. Poisonous berries and fungi. Contaminated soil (see general information below). 	 Display common poisonous species and instruct pupils as to hazards. Cover all cuts and grazes. Use sterilised soil or potting compost for planting seeds. Wash hands after touching plants
Actions – in the event of a problem	 Wear plastic gloves.
 Identify cause of an allergic reaction and remove from the pupil – seek medical advice in the 	Warn pupils of dangers of hand, eye and mouth contact.

Involve pupils in the process of agreeing any precautions for the activity.

General information

event of a severe reaction.

- Symptoms of an allergic reaction include: wheezing, coughing, sneezing, skin rash, skin reddening, itching, sweating, runny noses, runny eyes.
- Some plants are known to be toxic and have poisonous seeds.
- Some species of plants are protected and should not be taken from their natural habitat.
- Garden tools can be dangerous if not regularly checked, eg: for loose handles and broken parts.
- Soils may be contaminated with pathogens such as toxocara and tetanus.
- Most soils are contaminated with parasites and pathogens, particularly as a result of animal fouling.
- Compost from garden centres is sterilised and should be used in preference to local soils if the risks are thought to be high or to minimise risks.

Additional guidance from CLEAPSS

L42 – Plants for classrooms

L226 – Carnivorous plants

Card Sc2.11

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Micro-organisms

Links to 1998 QCA Scheme of Work Units

Contamination with other food

Explosion caused by build up of

Actions – in the event of a problem

reaction and remove from the

must cover the surface with a

Spillages on skin or clothing should be washed immediately

with soap and hot water.

pupil – seek medical advice in the

In the event of a spillage, teachers

strong disinfectant for 30 minutes and then wipe up wearing gloves.

gases when growing yeast.

Identify cause of an allergic

event of a severe reaction.

Useful equipment

- Plastic gloves.
- Containers that can be sealed.

Precautions – suggested actions

- Wash hands with soap and water before and after.
- Cover cuts and grazes.
- Keep cultures, such as mouldy bread and other foodstuffs, in sealed containers and dispose of with normal school waste without unsealing when finished.
- Keep away from other foodstuffs (such as in a fridge) to avoid contamination.
- Containers used for growing yeast should only be loosely plugged with cotton wool.
- Wear plastic gloves.
- Tell pupils they **must not** make hand, eye and mouth contact.

Involve pupils in the process of agreeing any precautions for the activity.

General information

- Symptoms of an allergic reaction include: wheezing, coughing, sneezing, skin rash, skin reddening, itching, sweating, runny noses, runny eyes.
- There is a legal requirement under the Control of Substances Hazardous to Health (COSHH) Regulations (1999) to carry out an assessment of risks associated with microbiological hazards whenever pupils are involved with microbiology. See page 4 of CLEAPSS L190 for further guidance.

Additional guidance from CLEAPSS

L190 – Studying micro-organisms in primary schools CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc2.12

Sc2 Life processes and living things

Go

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6B

Hazards

stuffs.

Allergic reactions.

Testing materials for strength, hardness and flexibility

Links to 1998 QCA Scheme of Work Units	Useful equipment
 1C 3C 2D 6D Hazards Fragments from brittle plastics causing cuts and eye injuries. Dust from polystyrene causing breathing problems. Sharp, jagged edges if materials break, causing cuts. Sharp, jagged edges if materials break, causing cuts. Broken glass causing cuts. Heavy masses falling and damaging feet. Splinters from wood. Whiplash injuries from breaking wires or elastic bands, etc, under tension. 	 Goggles - British Standard (BS) 2092. Strong gloves, eg: gardening gloves. Precautions - suggested actions Wear goggles if testing strength or if there is the risk of brittle plastic breaking. When squashing rigid materials use a vice or G-clamp. Wear strong gardening gloves to protect hands when testing rigid materials. Avoid glass. Warn pupils of the dangers of breaking wires and elastic bands under tension. Involve pupils in the process of agreeing any precautions for the activity.
 Wrap broken glass in newspaper and place in a dustbin (not waste paper bin) and liaise with cleaning staff. 	
General information	

Additional guidance from CLEAPSS

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Rocks and soils

Links to 1998 QCA Scheme of Work Units

3D

Useful equipment

- Plastic gloves.
- Goggles.

Hazards	Precautions – suggested actions
 Hazards Fragmenting rocks. Contaminated soils (see general information below). Injury due to damaged gardening tools. 	 Precautions - suggested actions Wear goggles if there is a risk of rocks fragmenting. Wash hands following the handling of soils. Use sterilised compost. Cover cuts and broken skin. Wear gloves when using tools and un-sterilised soils. Warn pupils of the potential hazard of contaminated soils and the importance of not touching eyes and mouth when handling soils. Check for loose handles and broken parts on gardening tools. Rinse tools after use and regularly wash with disinfectant solution.
	Involve pupils in the process of agreeing any precautions for the activity.

General information

- Soils may be contaminated with pathogens such as toxocara and tetanus.
- Most soils are contaminated with parasites and pathogens, particularly as a result of animal fouling.
- Compost from garden centres is sterilised and should be used in preference to local soils if the risks are thought to be high or to minimise risks.

Additional guidance from CLEAPSS

L120 – Earth science: Key Stages 1 & 2 CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc3.2

Sc3 Materials and their properties

Water and other liquids

Links to Work U	o 1998 QCA Scheme of nits	Useful equipment
2D	5C	Plastic gloves.
3C	5D	• Hot water from a tap.
4C	6C	
4D	6D	
Hazard	S	Precautions – suggested actions
Allergic reaction to substances		 Identify any pupils with skin

- such as washing-up liquid.
- Swallowing liquids, eg: when exploring bubbles.
- Slippery surfaces.
- Scolding.
- Water and electricity.
- Chemical reaction when mixing substances with liquids.
- Oil **must not** be heated unless in a water bath.

Actions – in the event of a problem

 Identify the cause of an allergic reaction and remove from the pupil – seek medical advice in the event of a severe reaction. Identify any pupils with skin allergies – wear gloves.

- Blow through straw or use shaped bubble blowers.
- Use absorbent material to cover area to avoid slipping. Warn pupils of the dangers of spilt liquids.
- To avoid spillage, encourage pupils to carry small containers of water within a larger one such as in a bucket.
- If hot water is required other than from sink, ensure adult supervision.
- Restrict other liquids to cooking ingredients such as vinegar, cooking oil, syrup.
- Site activities away from electrical appliances and mains supply.
- For mixing purposes, use only cooking ingredients.

Involve pupils in the process of agreeing any precautions for the activity.

General information

• Many liquids and solutions found in the home and at school are hazardous, eg: bleach, oven cleaners. Warn pupils of the dangers.

Additional guidance from CLEAPSS

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc3.3

Sc3 Materials and their properties

Thermal conductors and insulators

Links to 1998 QCA Scheme of Work Units	Useful equipment
4C	Plastic covered thermometers.Thermosticks.Digital thermometers.Hand-held sensors.
Hazards	Precautions – suggested actions
 Scolding. Broken thermometers. Allergic reaction to insulating materials such as fibreglass and loft insulation materials. 	 Restrict hot water to that from a tap. Ensure adult supervision. Only adults should pour hot water into containers in a tray. Place an elastic band around the thermometer to prevent rolling.
Actions – in the event of a problem	 Use plastic covered thermometers.
 Wrap broken thermometers in newspaper and place in a dustbin (not waste paper bin) and liaise with cleaning staff. Identify the cause of an allergic reaction and remove from the 	 thermosticks, digital thermometers, computer or hand-held sensors. Mercury thermometers must not be used. Identify any pupils and adult helpers with skin allergies.
pupil – seek medical advice in the event of a severe reaction.	Involve pupils in the process of agreeing any precautions for the activity.

General information

- Symptoms of an allergic reaction include: wheezing, coughing, sneezing, skin rash, skin reddening, itching, sweating, runny noses, runny eyes.
- Mercury thermometers should not be used. This is because liquid mercury vaporises at a low temperature and can therefore get into the body easily. Mercury is poisonous.

Additional guidance from CLEAPSS

- L157p Measuring temperature
- PS60 Datalogging & control equipment for primary schools

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc3.4

Testing properties of materials – magnetic, squashing, bending, twisting and stretching

Links to 1998 QCA Scheme of Work Units

Useful equipment

1C • Goggles. 2D • Gloves. 3C

Hazards

- Young children swallowing magnets.
- Sharp edges and broken fragments, eg: from springs, splinters from wood.
- Loose iron filings can irritate the skin and eyes.
- Trapped skin when compressing springs.
- Injury from springs or elastic bands when released after compression or stretching.
- Expanded polystyrene **must not** be used to test bending or twisting since the polystyrene dust released is hazardous.

Precautions – suggested actions

- Warn pupils not to put magnets near or in mouths.
- Wear goggles if testing *strength*.
- When squashing rigid materials use a vice or G-clamp.
- Wear strong gardening gloves to protect hands when testing rigid materials.
- Avoid glass.
- Iron filings **must** be used in sealed containers.
- Warn pupils to release compressed or stretched materials slowly to avoid injury.

Involve pupils in the process of agreeing any precautions for the activity.

General information

Card Sc3.5

- Frequent bending and unbending of metal may cause fractures which give sharp edges and produce heat.
- Pupil-sized gardening gloves may be purchased from Hampshire's County Supplies.

Additional guidance from CLEAPSS

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Sc3 Materials and their properties

Heating materials – using electrical sources

Links to 1998 QCA Scheme of Work Units	Useful equipment
2D 5D 4C 6C 4D 6D 5C	 Safety signs. Oven gloves. Edge safety guard for cookers where possible.
	Suitable heating sources
	Cookers and microwaves.Electrical hot plates and kettles.
Hazards	Precautions – suggested actions
 Burns or scalds. Tripping over wires and leads. Actions – in the event of a problem Run the burn under cold water for a minimum of 10 minutes.	 Use oven gloves to remove containers from heat sources. Use adult supervision. Turn handles inwards. Indicate when cooker is switched on, such as large <i>hot</i> sign. Turn off appliance immediately after use. Teach pupils to pull clingfilm from the furthest edge of the container towards themselves so as to allow the steam to escape. Avoid re-heating liquids that have already been boiled in microwave ovens. Let heated liquids stand in the microwave before use. Melt materials such as foods or wax indirectly, such as over a saucepan of hot water. Teach pupils the procedure for dealing with burns. Ensure leads are tucked out of the way to prevent accidents.

Please turn overleaf

Precautions – suggested actions (continued)

- Consider the height of the cooker in relation to height of pupils when assessing whether a pupil can remove containers from cooker, etc.
- Use low melting point wax, such as blocks sold for the treatment of arthritis, or low melting point paraffin wax.
- A bucket of cold water should be readily available in case of a burn.

Involve pupils in the process of agreeing any precautions for the activity.

General information

- See the design and technology safety guidelines on use of cookers and microwaves.
- A fire blanket **must** be located next to the cooker.
- See *Be safe* by The Association for Science Education.

Additional guidance from CLEAPSS

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Heating materials – using candles and night lights

Links to 1998 QCA Scheme of Work Units	Useful equipment
3C 5D 4C 6C 4D 6D 5C	 Sand trays. Safety matches. Bucket of cold water. Hot water from a tap. Goggles.
Hazards	Precautions – suggested actions
 To pupils with respiratory problems, such as asthmatics. Burns. Fire. Plastics of unknown origin must not be heated as many plastics form harmful vapours, eg: polystyrene, acrylics, resins and polyurethane. 	 Identify any pupils with medical conditions, including those with respiratory problems. Ensure inhalers are readily available. Ensure room is well ventilated. Use a snuffer to extinguish candles. Fix candles or night lights on a stable base and place in a sand trav.
Actions – in the event of a problem	Use safety matches.
 In the event of a burn – flood affected area with cold water for at least 10 minutes. If a pupil suffers an asthma attack – ensure they keep taking their inhaler until symptoms subside (it can be taken up to 30 times if necessary). 	 Secure loose clothing, such as at the wrist. Tie back long hair. Limit quantities of materials to be melted. Wear goggles. Ensure a bucket of cold water is readily accessible in the event of a burn. Pupils should be taught not to sit down during heating activities, so they can move more quickly if there is an accident. Involve pupils in the process of agreeing any precautions for the
	activity.

Please turn overleaf

Sc3 Materials and their properties

Card Sc3.7

General information

- Symptoms of an allergic reaction include: wheezing, coughing, sneezing, skin rash, skin reddening, itching, sweating, runny noses, runny eyes.
- The following unsuitable heating sources **must not** be used:
 - spirit burners
 - oil lamps
 - portable bottled gas burners
 - picnic stoves
 - methylated spirit burners
 - electric paint strippers
 - solid fuel burners.

Additional guidance from CLEAPSS

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk



Burning materials

Links to 1998 QCA Scheme of Work Units	Useful equipment
3C 5D 6D	Tongs.Bucket of cold water.Goggles.Candle snuffer.Sand trays.
	Suitable heating sources
	Candles and night lights.
Hazards	Precautions – suggested actions
 To pupils with respiratory problems, such as asthmatics. Burns. Fire. Toxic fumes. Man-made materials, such as polyurethane, polystyrene, foams and plastics, must not be used in burning tests. 	 Ensure room is well ventilated. Identify any pupils with medical conditions, including those with respiratory problems. Ensure inhalers are readily available. Use a snuffer to extinguish candles. Fix candles or night lights on a stable base and place in a sand tray. Use safety matches.
Actions – in the event of a problem	
 If any pupils or adults suffer an allergic reaction remove from the area until the air has cleared. In the event of a burn – flood affected area with cold water for at least 10 minutes. If a pupil suffers an asthma attack – ensure they keep taking their inhaler until symptoms subside (it can be taken up to 30 times if necessary). 	 Secure loose clothing, such as at the wrist. Tie back long hair. Only use small samples of materials to burn. Use tongs for holding materials. Conduct flammability tests outside prior to activity with pupils. Wear goggles. Ensure a bucket of cold water is readily accessible in the event of a burn.
	Involve pupils in the process of agreeing any precautions for the activity.

Please turn overleaf

Card Sc3.8

General information

- Symptoms of an allergic reaction include: wheezing, coughing, sneezing, skin rash, skin reddening, itching, sweating, runny noses, runny eyes.
- The following unsuitable heating sources **must not** be used:
 - spirit burners
 - oil lamps
 - portable bottled gas burners
 - picnic stoves
 - methylated spirit burners
 - electric paint strippers
 - solid fuel burners.

Additional guidance from CLEAPSS

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc3.8

Mixing materials

Links to 1998 QCA Scheme of Work Units	Useful equipment
2D 6C 3C 6D 4D	Plastic gloves.Dust masks.Goggles.
Hazards	Precautions – suggested actions
 Pupils and staff may experience an allergic reaction to different substances. Lemon juice and vinegar will sting if it gets into a cut. Because carbon dioxide is released during the reaction between vinegar and sodium bicarbonate, and between lemon juice and baking powder, placing a thumb over the end of a container and shaking may lead to the container breaking or exploding. Mixing unknown substances. Inhalation of dust or powders. 	 Cover cuts. Mixing materials together may produce materials with unknown hazards, therefore use <i>common</i> combinations when doing this: lemon juice and baking powder, vinegar and sodium bicarbonate, cement and water, plaster of Paris and water. Use cooking ingredients when mixing substances. Use small quantities of powders to minimise the need for dust masks and safety goggles.
Actions – in the event of a problem	Involve pupils in the process of agreeing any precautions for the

• Identify cause of an allergic reaction and remove from the pupil.

General information

• Symptoms of an allergic reaction include: wheezing, coughing, sneezing, skin rash, skin reddening, itching, sweating, runny noses, runny eyes.

activity.

- Because a gas is often produced when substances are mixed, the contents in a container may overflow, so have paper towels to hand.
- Washing powder and dishwasher powder are often highly irritant and would not be recommended for mixing. Look for hazard symbols on packs.
- Plaster of Paris generates heat when mixed with water.
- Some children have an allergic reaction to some food colouring/colourants.

Additional guidance from CLEAPSS

- L5 Safe use of household and other chemicals
- PS74 Using plaster of Paris in primary schools

Card Sc3.9

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Sc3 Materials and their properties

Electricity – appliances

Links to 1998 QCA Scheme of Work Units	Useful equipment
2F 4C	 Residual Current Devices (RCDs) to be used with electrical appliances. Safety signs. Oven gloves. Edge safety guard for cookers where possible.
Hazards	Precautions – suggested actions
 Electricity can kill. Overloading. Hot extension leads. Burns from heating appliances. Tripping over extension leads. 	 Tell pupils never to experiment with mains electricity. Use RCDs when operating mains appliances. Check equipment visually (see <i>General information</i> section overleaf).
Actions – in the event of a problem	 Fully extend extension leads to prevent overheating.
 Switch off appliances at mains. In the event of electrocution – switch off mains before touching victim. Ensure airway is open. If a burn is sustained – flood affected area with cold water for at least 10 minutes. 	 Cover extension lead wires with mats. Display a <i>hot</i> warning sign when heating appliances in use and follow safety procedures. Use oven gloves. Turn saucepan handles inwards. Fit guard edges. Check height of the cooker is appropriate for pupils. Involve pupils in the process of agreeing any precautions for the activity.

Card Sc4.1

Sc4 Physical processes

Please turn overleaf

General information

- Electrical appliances should have a BEAB (British Electrical Approvals Board) safety standard mark.
- All portable equipment must be inspected visually and tested at intervals as described in *Electricity at work – Guidance for managers*, Appendix 3, published by HCC, March 2006. See: <u>http://intranet.hants.gov.uk/hrsafety/</u><u>safety-polstan/electricity/electricity-guidance.htm</u>.
- Standard cookers require a 30 amp electrical circuit. A baby Belling, microwave, cookpan or mixer requires a 13 amp fuse.
- Set out below are the basic visual checks that you can make on electrical appliances as recommended in *Electricity at work Guidance for managers*, Appendix 2.

Electrical safety visual checklist:

- **Check the plug** for cracked casing, bent or missing conducting pins, signs of scorching/overheating, ensure cable is effectively secured by the cable grip of the plug, and that the correct fuse is fitted.
- **Check the cable** to ensure all connections are sound and that there are no cuts or abrasions (light scuffing is acceptable).
- Check the equipment for damage to external casing, missing or loose screws, missing guards/inspection panels, overheating and whether it is located near a water source.

Action required:

If there is any doubt as to the potential safety of electrical equipment, take the equipment out of use immediately and clearly label the equipment:

DANGER. Unsafe electrical equipment. DO NOT USE.

Report any defects.

Additional guidance from CLEAPSS

L86p – Electrical safety

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc4.1

Electricity – safety code when using mains electricity

Links to 1998 QCA Scheme of Work Units	Useful equipment
2F 4F	 Poster displaying electrical safety awareness.
6G	
Hazards	Precautions – suggested actions

- Electric shock.
- Burns.
- Tripping over trailing wires.

Actions - in the event of a problem

- Treat victim of electric shock for unconsciousness first, before treating burns.
- If a burn is sustained flood affected area with cold water for a minimum of 10 minutes.

Teach pupils the following:

- electricity can kill
- wires and plugs may become hot and cause minor burn
- never touch electrical appliances, plugs or sockets with wet hands
- keep electrical appliances away from water
- inform an adult if plugs or equipment appear to have a fault, are damaged, or the lead is frayed or burnt, **and do not switch on**
- switch off at the socket before plugging in or unplugging a piece of equipment
- remove a plug from a socket by holding the plug itself and not by pulling the lead
- check that there are no trailing wires. If there are, tuck them out of the way to prevent accidents.

Involve pupils in the process of agreeing any precautions for the activity.

Please turn overleaf

General information

- Posters about the dangers of electricity can be obtained from the Electricity Board.
- Damaged plugs and frayed leads are the commonest sources of injuries.
- Mains leads should never be joined or repaired damaged leads should be replaced by a suitably qualified person.

Additional guidance from CLEAPSS

L86p – Electrical safety

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Electricity – batteries

Links to 1998 QCA Scheme of Work Units	
2F	
4F	

6G

Hazards

- Minor burns.
- Damaged skin from leaking batteries (acid burn).
- Short circuiting and fire.

Actions – in the event of a problem

• If a burn is sustained, including acid burns – submerge affected area in cold water for a minimum of 10 minutes.

Useful equipment

• Battery tester.

• Teach pupils how to prevent short circuiting batteries.

Precautions – suggested actions

- Ask pupils to disconnect wires from the battery during breaks in the lesson.
- Avoid mixing different types of batteries in investigative work.
- Dispose of batteries when the voltage has dropped below the level at which they can be used, as they may begin to leak.
- The contents of batteries may be corrosive and toxic. Avoid cutting open.
- Store batteries so that the terminals do not touch to avoid the danger of short circuiting, overheating and fire.
- **Do not** use rechargeable batteries or car batteries.

Involve pupils in the process of agreeing any precautions for the activity.

Card Sc4.3

Please turn overleaf

General information

- Dry batteries are the safest to use for investigative work. It is not possible to get an electric shock from a 1.5 volt battery (cell) unless many of them are joined together.
- Rechargeable batteries pose a greater hazard when short circuited as they discharge very quickly, causing batteries and wires to become extremely hot.
- The heavy metals, nickel and cadmium, found in rechargeable batteries are environmental pollutants.
- Car batteries are capable of producing extremely high current flow and could cause severe burns or explosion. *They must not* be used for *investigative work*.
- It is dangerous to try to extend the life of a dry battery by heating or by recharging in a charger.

Additional guidance from CLEAPSS

L112 – Batteries and L-V units

L122 – Simple electric circuits with bulbs & batteries CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Electricity – circuits

Links to 1998 QCA Scheme of Work Units	Useful equipment
2F	Battery tester.
4F	
6G	

Hazards

- Minor burns.
- Cuts from broken bulbs.
- Batteries (*Hazard Card Sc4.3* **must** be read).

Actions – in the event of a problem

- Wrap broken bulb(s) in newspaper and place in a dustbin (not waste paper bin) and liaise with cleaning staff.
- If a burn is sustained flood affected area with cold water for a minimum of 10 minutes.

Precautions – suggested actions

- Teach pupils how to prevent short circuiting batteries.
- Ask pupils to disconnect wires from the battery during any breaks in the lesson.
- Include a component in a circuit when using lengths of wire to make a resistor or an electromagnet.
- Warn pupils that steel wool and aluminium foil may become hot or burn when conducting electricity.

Involve pupils in the process of agreeing any precautions for the activity.

General information

- When wires are connected directly from one terminal of the battery to another without a component such as a bulb or buzzer, the battery will discharge very quickly. This is called a short circuit. This can generate heat and burn fingers.
- See also Hazard Card Sc4.3.

Additional guidance from CLEAPSS

- L112 Batteries and L-V units
- L122 Simple electric circuits with bulbs & batteries

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc4.4

Forces – pushes and pulls, forces and movements (KS1)

Links to 1998 QCA Scheme of Work Units	Useful equipment
1E 2E	Goggles.
Hazards	Precautions – suggested actions
Young children swallowing magnets.	Warn pupils not to put magnets near or in mouths.
 Flying objects hitting pupils. Cuts from changing the shape of objects by squashing, bending or twisting. 	 leach pupils to look out for others when exploring moving objects and also know how to carry out the activity safely.
 To pupils with respiratory problems when blowing bubbles, balloons, etc. 	 Consider whether activities using flying objects would be best carried out indoors or outdoors.
Inhalation of bubble mixture.	 Avoid using brittle materials to test.
 Trips and falls due to moving objects. 	• Wear gloves if there is a risk of cuts when changing the shape of objects. See Hazard Card Sc3 5
Actions – in the event of a problem	 Identify pupils with medical
 Wash any small cuts and cover. Adults dealing with cuts should wear protective gloves, use disinfectant to clear spillages and thoroughly wash their hands after contact. 	conditions, including those with respiratory problems.
	 Ensure inhalers are readily available.
	 Teach pupils to blow rather than suck when exploring bubbles.
	Ensure that you choose a bubble mixture that will not harm pupils.
	Involve pupils in the process of agreeing any precautions for the activity.
• · · · ·	
General information	

General information

Additional guidance from CLEAPSS

L163 – *Teaching forces*

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc4.5

Forces – magnetism and springs

Links to 1998 QCA Scheme of Work Units

Useful equipment

3E

Hazards

- Irritation of skin and eyes when using loose iron filings.
- Damage to toes from falling objects such as kilogram masses.
- Injuries to eyes and face from snapping materials when overstretched.
- Iron filings **must** be placed in a sealed container.

Precautions – suggested actions

- Wash hands after contact with loose iron filings.
- Raise pupils' awareness of effect of falling objects. Place a box containing soft, absorbent material to cushion falling objects.
- Eye protection must be worn when there is a risk of snapping or overstretching materials.

Involve pupils in the process of agreeing any precautions for the activity.

General information

- Loose iron filings are difficult to remove from magnets.
- Iron filings can be purchased in sealed containers.
- Spring-based instruments, including home-made Newton meters, can be dangerous if suddenly released under tension.
- Stronger meters, which might be used to measure a pupil's strength, must be firmly anchored with plenty of clear space around the pupil.

Additional guidance from CLEAPSS

L161 – Magnets for primary schools

L163 – Teaching forces

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc4.6

Forces (KS2)

Links to 1998 QCA Scheme of Work Units

Useful equipment

4E

6E

Hazards	Precautions – suggested actions
 Friction burns. Injury to fingers if exploring bicycles. Injury from moving or flying objects. 	 Tell pupils that friction generates heat. Allow plenty of space for activities involving moving objects. Ensure hanging structures, such as pulleys, are firmly fixed.
	 Limit the size and load of moving objects.
 In the event of a burn – flood affected area with cold water for at least 10 minutes. 	 Teach pupils to aim away from each other when testing flying objects and projectiles. Naked flames must not be used for hot air balloons.

Involve pupils in the process of agreeing any precautions for the activity.

General information

- When releasing objects from a height, ensure pupils stand on secure structures, such as physical education boxes, rather than classroom furniture.
- It is dangerous to use hand-held electrical appliances near water. When testing movement of boats, use battery powered fans.
- Activities involving flying things, such as kites, hot air balloons, catapults, water rockets, paper aeroplanes, etc, often require a large space and require close supervision.
- Hot air balloons should be filled with hot air from a hairdryer.

Additional guidance from CLEAPSS

L163 – *Teaching forces*

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Card Sc4.7

Light

Card Sc4.8

Links to 1998 QCA Scheme of Work Units	Useful equipment
1D 5E 3F 6F	Candle holders.Sand.Long safety matches.
Hazards	Precautions – suggested actions
 To eyes when looking at very bright light sources. Burns from naked flames. To pupils with respiratory problems, such as asthmatics. Skin burns from focusing lens on the skin in sunshine. 	 Make pupils aware of the dangers of looking at very bright lights. Teach pupils that they should never look directly at the Sun, or through binoculars, telescopes, prisms or lens. Ensure there is sufficient supervision. Tell pupils to keep away from naked flames
Actions – in the event of a problem	 Identify pupils with medical conditions, including those with
 In the event of a burn – flood affected area with cold water for at least 10 minutes. If a pupil suffers an asthma attack – ensure they keep taking their inhaler until symptoms subside (it can be taken up to 30 times if necessary). 	 conditions, including those with respiratory problems. Ensure inhalers are readily available. Ensure room is well ventilated. Use a snuffer to extinguish candles. Fix candles or night lights on a stable base and place in a sand tray. Use safety matches. Tie back long hair and secure loose clothing, such as at the wrist, when using candles or night lights. Pupils should be taught not to sit down when using candles, so they can move more quickly if there is an accident.

Please turn overleaf

General information

- Symptoms of an allergic reaction include: wheezing, coughing, sneezing, skin rash, skin reddening, itching, sweating, runny noses, runny eyes.
- A bucket of cold water should be easily available in case of a burn.

Additional guidance from CLEAPSS

PS17 – Viewing the Sun

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

Sound

Links	to 1998 QCA Scheme of
Work	Units

Useful equipment

1F 5F • *Milton* solution for disinfecting equipment.

Hazards	Precautions – suggested actions
Damage to hearing from excessive sound close to ear.	 Instruct pupils not to shout into the trumpet or diaphragm ends of stathageneous or tubageneous and tubageneous of tubageneous and tubageneous an
 Injuries caused by breaking or flicking materials. 	 Use robust materials or those
 Damage to teeth from vibrating tuning forks. 	designed specifically for musical activities which are unlikely to fracture when exploring sources of
Cross-infection from shared	sounds.
equipment.	• Teach pupils to avoid contacting a vibrating tuning fork with their teeth or glass objects.
	 Any equipment which is placed into the mouth or ear should be disinfected after each use by a pupil.
	Involve pupils in the process of agreeing any precautions for the activity.

General information

• Thin glass shatters if a wet finger is rubbed around the rim.

Additional guidance from CLEAPSS

CLEAPSS Helpline: 01895 251496 www.cleapss.org.uk

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