Hampshire Services
HIAS SCHOOL IMPROVEMENT

SERVICES FOR SCHOOLS

# Safety in science

## at Key Stages 1 and 2

**September 2020, 4th edition**

Hampshire County Council

www.hants.gov.uk

# Contents

# 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* (December 2014, third edition).

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 recognised good practice formally outlined in 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 *Explore* (via school communications), and also have access to the CLEAPSS *Helpline* on:


Tel: 01895 251496.

CLEAPSS also produces a range of guidance and advice which is available via their website: http://primary.cleapss.org.uk/.

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

This safety guidance should be used in conjunction with other appropriate local authority safety guidance, such as advice from Hampshire Outdoors, found on the EVOLVE website (access via: www.hampshireoutdoors.com).

Please contact the Hampshire Outdoors team if you have any questions or queries regarding outdoor/offsite activities: outdoor.education@hants.gov.uk.

# 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, 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 local authority concerning hazards associated with common procedures and materials used in science in Key Stages 1 and 2. Teachers will need to consult this 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 children.

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 some published medium-term planning. If there is a conflict of advice, then it will be necessary to use the information provided by the local authority.

## 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
- the quantities and particular 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 children 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?*

Some additional guidance can be found in the CLEAPSS guidance PO22 – *Making safety work for you*.

# 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 procedures as the result of risk assessments
- monitor and review arrangements through an annual safety audit.

## Governors (where they may be the employer – for Trust/Foundation/Aided/Academy schools)

- 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.

## Headteachers

- develop a safety culture that is in accordance with the school's policy and the local authority'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-ordinators

- 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 – this is supported by the local authority's annual science safety audit form
- 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 CLEAPPS
- 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 risk involved in the activity, and the actions that should be taken to minimise risk
- 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 involved in the usual activities of the school who are under the control and supervision of the school

- 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:

- PO48 – *Model health and safety policy for science*
- PO11 – *Leading primary science in your school*
- PO20 – *Risk assessment concept cartoons*.

Contact CLEAPSS on:

Website: http://primary.cleapss.org.uk/.

Helpline: 01895 251496.

# Part 3: Hazard guidance cards

The hazard guidance cards contain the following information:

- the broad area of study within the National Curriculum and a reference to the Hampshire Inspection and Advisory Service (HIAS) document *Key ideas in primary science*
- useful safety equipment
- identification of hazards
- precautions – suggested actions to minimise risk
- actions to take
- general supporting information
- additional CLEAPSS guidance, if relevant.

## Variation and evolution

| | |
|---|---|
| Card no 1 | Environment |
| Card no 2 | Micro-organisms |

## Animals

| | |
|---|---|
| Card no 3 | Exercise |
| Card no 4 | Food |
| Card no 5 | Humans – senses |
| Card no 6 | Humans – teeth |
| Card no 7 | Humans – drugs |
| Card no 8 | Humans – organs |
| Card no 9 | Animals – from the school grounds, visits to farms and zoos |
| Card no 10 | Animals – *Pet Day* – pets brought into school |
| Card no 11 | Animals – kept in school |

## Plants

| | |
|---|---|
| Card no 12 | Plants |

## Materials

| | |
|---|---|
| Card no 13 | Testing materials for strength, hardness and flexibility |
| Card no 14 | Rocks and soils |
| Card no 15 | Water and other liquids |
| Card no 16 | Thermal conductors and insulators |
| Card no 17 | Testing properties of materials – magnetic, squashing, bending, twisting and stretching |
| Card no 18 | Heating materials – using electrical sources |
| Card no 19 | Heating materials – using candles and night lights |
| Card no 20 | Burning materials |
| Card no 21 | Mixing materials |

## Forces

| | |
|---|---|
| Card no 22 | Forces – pushes and pulls, forces and movement |
| Card no 23 | Forces – magnetism and springs |
| Card no 24 | Forces |

## Electricity

| | |
|---|---|
| Card no 25 | Electricity – appliances |
| Card no 26 | Electricity – safety code when using mains electricity |
| Card no 27 | Electricity – batteries |
| Card no 28 | Electricity – circuits |

## Light

| | |
|---|---|
| Card no 29 | Light |

## Sound

| | |
|---|---|
| Card no 30 | Sound |

# Earth and space

See Light – Card no 29

In addition to the guidance contained on these cards, science co-ordinators should note the advice given by CLEAPSS in:

PO48 – *Model health and safety policy in science*

PO22 – *Making safety work for you*.



ISBN: 978-1-85975-981-3

4th Edition

September 2020