

GL170 - Managing pupils safety during an eclipse

This guide explores organisational issues surrounding ensuring the safety of pupils in schools during a solar eclipse. Technical information regarding the details of different ways of viewing an eclipse can be found in CLEAPSS guide PS17 and in the Royal Astronomical Society leaflet *How to observe an eclipse safely*, which can be found at www.ras.org.uk/images/solar_eclipse_leaflet.pdf

An important opportunity

Solar eclipses are comparatively rare phenomenon and represent a significant event in people's lives. They graphically demonstrate important scientific ideas as well as offering wealth of opportunities for study across the curriculum. With a degree of advanced planning the safety risks can managed successfully in a school context, giving pupils access to an experience to remember.

What are the hazards of viewing the Sun?

Viewing the Sun directly is hazardous; eye injury or blindness can be caused. The Sun is no less dangerous to look at during an eclipse than on a normal sunny day. The key difference is that on a normal sunny day pupils have no reason to look at the sun (and so no special precautions are needed when pupils are outside). During an eclipse event there is an obvious incentive to look directly at the sun which dramatically increases the risk.

There is a very real danger of permanent damage to the retina caused by radiation emitted by the Sun. Looking directly through pinholes, sun glasses, polarisers, smoked glass, photographic negatives, plastic bags, compact discs, aluminium foil, Mylar blankets, etc. does not provide adequate protection. Similarly viewing the eclipse from inside behind normal window glass, including where a reflective film has been applied, is also unsafe

Organisational issues

When the eclipse event occurs during the school day the school has a responsibility to ensure the safety of the pupils. Regardless of whether you intend to specifically organise an opportunity for pupils to view the eclipse or not, a general duty of care exists.

- Remind all staff (including all support staff and part time workers) of the dangers associated with viewing the sun, and brief them well in advance of how you plan to manage the pupils during the event in your school.
- Warn pupils of the dangers of viewing the sun in assemblies and form periods in the run up to the eclipse. The science department/science coordinator should be able to help with this and may want to include work on the eclipse in their lessons. However, do not rely on science lessons alone to give the safety message.
- Alert the pupils to the risk posed by using unsuitable materials as filters. Only those sold specifically for the purpose of viewing an eclipse are suitable.
- The natural reflex typically prevents damage, but overriding the reflex runs a real risk of permanent injury. Pupils who wear spectacles run a particular risk of focussing the sun's rays on the central area of their retina (which has the most densely-packed light receptors) and should be warned accordingly.
- Alert pupils to the need for any specifically designed viewers to be in perfect, as new condition. Any scratches or pin holes in the lens material will compromise their effectiveness. For this reason using eclipse viewers or glasses from the last eclipse in 2000 is best avoided, and sharing between students can lead to problems with damage as the viewers are transferred between them.

- Avoid pupils being outside and unsupervised at the time of the eclipse. Consider, if necessary, changing the time of any break, lunch time, lesson change over, or even the beginning or end of the school day.
- Check that any classrooms with south-facing windows have blinds that can be used during the period of the eclipse. If none are present, consider making temporary window blackouts. You can determine the areas at risk by observing the path of the sun in all south facing rooms at the same time of day as the eclipse. Be sensible about this and limit any precautions to rooms with groups of pupils in. Do not feel you have to cover the windows of the entire entrance foyer when a warning to staff would be sufficient.
- Do not rely on cloud cover to provide protection. If it is cloudy on the day of the eclipse do not abandon a well-planned viewing event in favour of simply sending every one outside instead. Clouds have been known to clear (even in the UK!) and the smallest of gap or thinning of the cloud cover will require suitable protective glasses to be worn.
- Where pupils cannot be relied upon to follow instructions, for example very young pupils, consider relocating these classes to other rooms for the period of the eclipse.
- Involving parents. Whilst not essential, it would be good practice to write to parents outlining your plans for the event. You could include a return slip with parental permission particularly if you intend to ask parent to provide their child with suitable eclipse viewers. See page 3 for further advice on viewers.

Arranging for pupils to view the eclipse; supervision

If you plan to enable your pupils to view the eclipse then safety during viewing is all about providing appropriate supervision. Consider the viewing activity as if it were a science lesson containing a challenging practical activity. Pupils need to be given clear instructions, provided with appropriate personal protective equipment and, above all, supervised during the activity.

- Indirect viewing methods are the safest (see the Royal Astronomical Society leaflet) However these methods still require careful instruction and close supervision to ensure pupils are not, for example, tempted to look directly at the sun through the pin hole of a pinhole camera or the holes in a colander, or that those not directly involved in the task don't take a sneaky peek.
- Zero tolerance of non-compliant behaviour is essential. Brief staff and pupils that any divergent behaviour during the viewing will result in those pupils being sent inside immediately. Deliberately or accidentally knocking the viewer from another pupils' eyes during the event could have serious consequences.
- Plan how to manage any pupils who have to be dealt with in this way. Where will they be sent? Who will be there to receive and supervise them? How will you ensure that they go to where they have been sent and how will this be supervised without distracting the staff members from looking after the rest of the pupils in their group?

Organising supervision

- All staff involved in supervising pupils during the eclipse need to have been briefed on the risks and their role in how the school plans to manage them, including which pupils will they be directly responsible for, where will they be and when.
- If only a proportion of pupils will be taking part in the viewing (for example as a result of non-universality of viewers) think very carefully about how supervision will be organised. Members of staff responsible for viewing groups will need registers of who they are supervising and will need to know where they are going to take their group. Members of staff with non-viewing groups will similarly need registers and senior staff will need to be on hand to sweep building to look out for any pupils using the event as an opportunity to go AWOL.
- Non viewing groups could watch events unfold by following online or television coverage

Eclipse viewers

Such viewers are likely to be the most popular means for pupils to view the eclipse, as they promise a more immediate experience.

- Make sure these are obtained from a reputable source and are marked as suitable for viewing the eclipse. Make sure you follow the instructions provided with the viewers. Most advise limiting the time spent on continuous direct observation.
- Warn pupils not to remove their viewers, even for a second, whilst viewing the eclipse.
- They are to all intents and purpose opaque. Pupils will not be able to walk around safely with them on because other than the Sun they will not be able to see anything. This introduces the risk of tripping, falling, etc. as well as increasing the likelihood of pupils removing them before averting their eyes from the sun

To buy or not to buy?

Providing pupils with viewers has distinct advantages:

- You can be sure of the provenance of the viewer
- It secures an entitlement for all pupils to the experience hence avoid the potential for pupils from disadvantaged backgrounds to miss out
- They can be issued in 'as new' condition to pupils just before they are needed, avoiding the possibility of damage on the journey to school
- If all pupils are involved the logistics of supervision are easier
- If you intend to sell viewers to pupils do not issue the viewers in advance of the eclipse. Pupils cannot be relied upon to keep them in as new condition until the event. Take payment in advance and distribute just before the event, probably by the member of staff supervising that group

If you intend to ask parent to provide viewers for their children then this presents a number of additional risks:

- Write to parents in advance emphasising the need for new viewers in pristine condition
- It is not practicable for the member of staff supervising each group to verify the condition of each pair of viewers before use because damage, such as scratches and pin holes, can be difficult to spot. However, a simple visual check by the teacher supervising a group, that all pupils under their supervision have viewers (no sharing) and that these appear new, is worth doing

What if the worst happens?

If during or after the eclipse a pupil presents themselves saying that for whatever reason s/he accidentally viewed the sun directly, it is essential to respond in a calm manner.

Temporary after-images, i.e. persistence of vision following momentary exposure, are the most likely accidental consequence and are unlikely to result in permanent eye damage. Reassure the pupil and seat her/him in a quiet, not overly brightly lit spot for half an hour or until the after-image disappears.

If after an hour the image remains or if the child complains of blurred vision, then s/he should be referred directly to accident and emergency department with ophthalmic facilities (phone first to identify the nearest facility). Secure an eye pad over the affected eye (or both if necessary) using a bandage.

If in doubt contact CLEAPSS (01895 251496)