Observing Solar Eclipses

Fact sheet

On 20 March the UK will experience a partial solar eclipse when more than 90% of the sun will be obscured.

Looking at or near the sun can cause permanent damage to the eyes. Never under any circumstances should anyone look near or directly at the sun, even when it is low on the horizon or partially obscured by thin cloud or the moon. The fact that the sun may seem dim does not mean it is safe to look at with the naked eye, or with optical instruments such as binoculars, telescopes or cameras. Any attempts to do so will risk serious, potentially blinding eye injury.

Observation of Solar Eclipses

As always, the popular appeal of eclipses will be considerable and it will be wise to remember the following advice if damage to the eyes is to be avoided. The sun is the brightest object in the sky. It is so bright that looking at or near to it can cause permanent damage to the eyes. Never under any circumstances look near or directly at the sun, even when it is low on the horizon or partially obscured by thin cloud or the moon. The fact that the sun may seem dim does not mean it is safe to look at with the naked eye, or with optical instruments such as binoculars, telescopes or cameras. If you do this you risk serious, potentially blinding eye injury.

There is only one safe way to observe the sun; this is indirectly, by projection. This involves focusing an image of the sun, formed by a telescope or binoculars, on to a white screen. Many telescopes are supplied with this equipment as standard. Alternatively a piece of white card can be held behind the eye piece and the distance and instrument adjusted to bring the image into focus. An inexpensive alternative is to use a piece of card with a pinhole in it to focus the image of the sun on to a white screen or piece of white card, taking care to shield the eyes from the sun.

Unsafe Alternative Methods

Some alternative viewing methods have been suggested and are listed below. However, these are NOT safe for the reasons given.

Sunglasses: These are not safe for solar observation: they absorb too little radiation.

Smoked Glass: This is not safe: the carbon deposit is fragile and does not absorb short wave radiation efficiently. Exposed Photographic Films: These are not safe: they do not absorb sufficient solar radiation.

The Eyecare Trust is a registered charity that exists to promote awareness of all aspects of eye health. For more information call our public information line on 0845 129 5001 or log on to www.eyecaretrust.org.uk

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Sun Caps: These are placed over the eyepiece(s) of the telescope or binoculars. They are not safe: they may not block out all dangerous solar radiation. Also they may become extremely hot and crack, which could cause eye damage from glass splinters.

Solar Filters: These are films of aluminised plastic available from some astronomical suppliers. Tests have claimed that this material is safe for use on telescopes or binoculars but no filter is perfectly safe. Filters can be damaged and the smallest pinhole or scratch can allow dangerous radiation to pass through.

Visors: These would not be safe because stray radiation may reach the eye around the edges of the visor. Even during a total eclipse solar radiation is intense enough to be dangerous.

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