

# Risk Assessment – Public Activity



ACTIVITY ASSESSED <b>Solar Observing</b>		ASSESSMENT DATE <b>August 2007</b> (last reviewed: <b>January 2010, EJR</b> )	
ACTIVITY LOCATION <b>Wynyard Woodland Park</b>		ASSESSED BY <b>Ed Restall</b> <b>Planetarium Director</b>	
HAZARD	Who's at risk?	PRECAUTIONS	RISK LEVEL
Telescopes fitted with finder scopes	Public & volunteers	<ol style="list-style-type: none"> <li>All telescopes fitted with a low magnification telescopic finder (refractor) will have the finder scope blacked out with 'Gaffa' or other similar opaque tape/material to avoid accidentally viewing the sun thru it.</li> <li>All telescopes in use for solar observing will be manned by at least one experienced volunteer or member of staff at all times.</li> </ol>	Medium
Telescopes fitted with external optical projection systems	Public & volunteers	<ol style="list-style-type: none"> <li>These are not direct line of sight, as long as no-one tries to get their head inside the equipment and stare into the objective (input) lens or mirror then there is no serious risk.</li> </ol>	Medium
Telescopes fitted with Calcium K-line solar filters and CCD cameras	Public & volunteers	<ol style="list-style-type: none"> <li>Such systems are not designed for direct viewing with the eye. The camera is fitted into the focusing tube making it impossible for inadvertent viewing.</li> <li>As long as the filter is used as directed there is no danger to the operator or equipment attached to the telescope.</li> </ol>	Low
Telescopes fitted with White light solar film for direct observing	Public & volunteers	<ol style="list-style-type: none"> <li><b>Direct optical viewing of the Sun with the eye – extreme caution at all times!</b></li> <li>Stopped down input (objective) apertures – no more than 6 inches in diameter.</li> <li>Solar film of ND5 or higher protection i.e. 1/10,000<sup>th</sup> of light allowed through or less.</li> <li>Check film in dark using high intensity light to ensure there are no defects, if there is any doubt the film will be replaced.</li> <li>Film always applied to filter frame at the light input (objective) end of the telescope and any potential ingress of unfiltered light at the input end of the telescope must be masked-off using 'Gaffa' or other similar opaque tape/material.</li> <li>All filters secured to the telescope, using 'gaffa' of similar tape if necessary.</li> </ol>	Medium High

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HAZARD	Who's at risk?	PRECAUTIONS	RISK LEVEL
Telescopes fitted with 1000 oaks filter	Public & volunteers	<ol style="list-style-type: none"> <li><b>Direct optical viewing of the Sun with the eye – extreme caution at all times!</b></li> <li>6inch diameter filter only to be used on 6inch telescopes or to 8inch scopes using the proprietary adaptor – no higher aperture scopes allowed.</li> <li>Any potential ingress of unfiltered light at the input end of the telescope must be masked-off using 'Gaffa' or other similar opaque tape/material.</li> <li>Check filter in dark prior to use using high intensity light to ensure there are no defects or ware &amp; tear, if there is any doubt the filter will not be used.</li> </ol>	Medium High
Telescopes fitted with Hydrogen Alpha filters	Public & volunteers	<ol style="list-style-type: none"> <li><b>Direct optical viewing of the Sun with the eye – extreme caution at all times!</b></li> <li>Filters must be checked in the dark using a strong light source prior to use to ensure that there is damage or ware &amp; tear to the equipment.</li> <li>Filters must only be fitted to optical tube assembly diameters for which they were designed and any potential ingress of unfiltered light at the input (objective) end of the telescope must be masked-off using 'Gaffa' or other similar opaque tape/material.</li> <li>The input (objective) filter must be securely attached using 'Gaffa' or other similar opaque tape/material if required.</li> <li>The output (eyepiece) filter must be securely mounted into the focusing tube.</li> </ol>	Medium High
Solar scopes	Public & volunteers	<ol style="list-style-type: none"> <li>These are not direct line of sight and hence projection systems, as long as no-one tries to get their head inside the equipment and look at the mirror then they represent a low risk.</li> </ol>	Low
Dedicated Hydrogen Alpha telescopes	Public & volunteers	<ol style="list-style-type: none"> <li>These must be checked in the dark using a strong light source prior to use to ensure that there is damage to the equipment, but being dedicated scopes they represent a low risk.</li> </ol>	Low
Telescopes fitted with eyepiece diffraction gratings	Public & volunteers	<ol style="list-style-type: none"> <li>These should only be used to project the Sun's emission lines and are not intended for direct viewing as long as no-one tries to get their head inside the equipment and look directly into the grating then there is no serious risk.</li> </ol>	Medium

The public are always advised never to look directly at the sun with an optical instrument, be it a telescope, binoculars or even a digital camera as this can cause permanent damage to the eye and even blindness.

The above telescope systems are conventionally used by amateur and professional astronomers alike to carry out their own solar observational work and in promoting the understanding of science with the general public. As long as they are checked before use and used in the prescribed way they represent no

risk to any individual using them. The above assessment describes other actions that will be necessary to safeguard the public with many individuals vying to look through a limited number of instruments.

As of August 2007 a completely new set of solar observing equipment has been bought under a Science & Technology Facilities Council (STFC) grant for the public promotion of science within the community. This is part of the International Heliophysical Year 2007 programme and as such is intended for the safe public observing of the Sun using specialised equipment under the control of experienced personnel.