

## Eclipse blindness *facts*

- Your eyes have lenses in them: using them to look at the sun is like using a magnifying glass to concentrate the sun's rays. This causes solar retinopathy (or eclipse retinopathy if you're looking at an eclipse).
- The eye damage caused by looking directly at the sun occurs on the retina: the back of the eyeball where the eye's lens projects light.
- Eclipse retinopathy can be immediate and permanent, immediate and reversible, or delayed and progressive depending on the circumstances of exposure.
- Signs of eclipse retinopathy include:
  - Reduced visual acuity (bad vision),
  - Central scotomas (blind spots),
  - Chromatopsia (disruption or tinting of color perception),
  - Metamorphosia (disruption or distortion of shape perception), and
  - Photophobia (light sensitivity)
- Solar retinopathy is thought to contribute to age-related macular degeneration later in life, a common cause of progressive blindness.
- There is no effective medical treatment for solar retinopathy.
- Vision often recovers after sun damage, but not always. Data are very limited, but in one case series of four patients, three had recovery of normal vision within 1-3 months. One patient's vision remained affected one year later.
- Solar retinopathy is NOT the same as "snow blindness." Snow blindness, also known as photokeratitis, is essentially a sunburn of the cornea (outer layer of the eye) and is usually self-resolving (though extremely painful).
- Solar retinopathy does not require a true burn caused by heat (like when focusing the sun's beam with a converging lens such as a magnifying glass). In solar retinopathy, the retina needs to be exposed to direct sun for less time and experience less increase in temperature on the retina than would cause a burn.
- Rather, solar retinopathy is mostly caused by photochemical damage. Molecules in the retina are exquisitely sensitive (their response to light images projected onto the retina create the chemical signals sent to our brain). These molecules are damaged by excessively bright light. (Similar injuries have occurred during eye surgery when the retina is exposed to excessive light from surgical tools.)
- Children are at increased risk of solar retinopathy because the lenses in their eyes are clear and crystalline—they do not block UV and infrared light like those of adults.
- Although it takes several seconds of direct sun exposure to cause solar retinopathy, that exposure is cumulative over time. Even looking at the sun for a fraction of a second can cause damage, if done repeatedly during the 2+ hours when the sun will be partially blocked during the eclipse could cause eye damage.