

# The Sun can be Dangerous for the Eye!

The **sunlight** is correlated with the pathogenesis of many **ocular disorders**, both **chronic** and **acute**; the latter are known as “**ocular phototraumatism**”.

## ***Chronic Eye Diseases***

The most common chronic eye diseases characterised by an **extended exposition to the sunlight** are **cataract**, **age-related macular degeneration eye disease**, and **pterygium**. With these diseases, the ocular bulb irradiation is an ascertained cause, among many other environmental risk factors (food habits, pollutants and others), as well as genetic factors (familial susceptibility).

## ***Acute Eye Diseases***

Acute diseases are directly linked to **eye exposition to sunlight**, with a **proved cause-effect relationship**. The most common examples of **acute phototraumatism** are: **solar retinopathy** and the so called **welders' retinopathy**.

The direct observation of the Sun determines a retinal irradiation of  $10 \text{ W/cm}^2$ , i.e. an irradiation 100,000 times higher than normal irradiation.

**Solar retinopathy** is provoked by the **phototraumatism** following **infrared (IR)** and **ultraviolet (UV) radiation**: the IR radiation determines an **increase of the retinal temperature (photocoagulation)**, whereas the UV radiation determines a **photochemical damage**. This is due to the high concentration of oxygen in the retina, the dense lipid layers susceptible to oxidation, and the presence of pigmented molecules “trapping” photons.

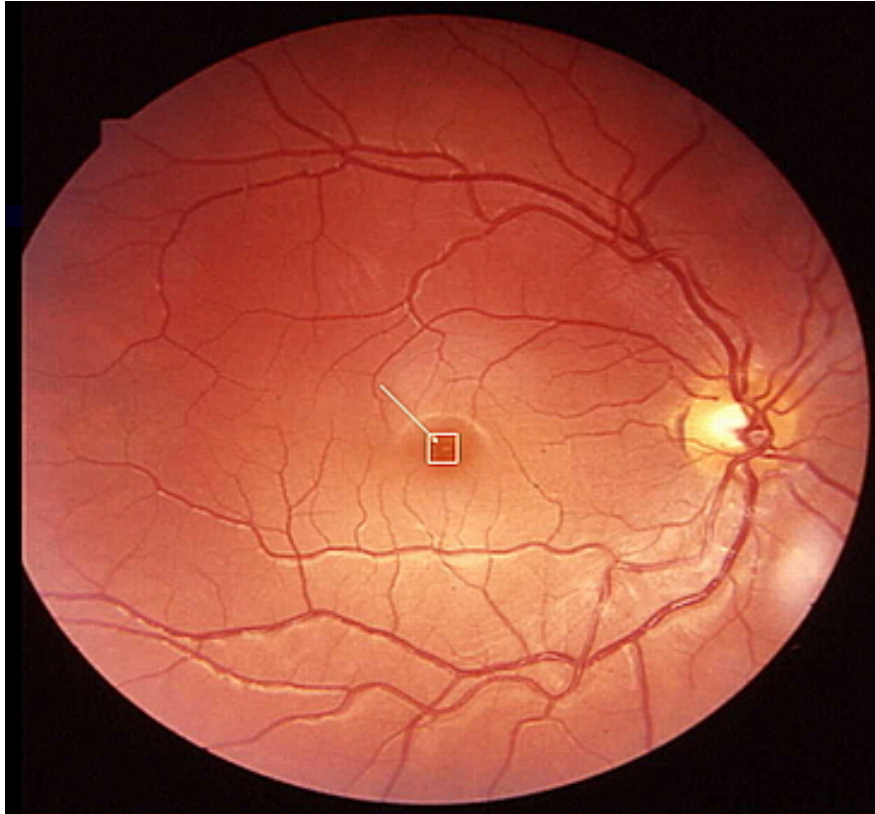


Image of the *fundus oculi* of a patient affected with solar retinopathy after having observed a solar eclipse through a non-exposed film (a filter absolutely inadequate for the protection of the eye!). It is evident in the white frame the *intraretinal macular edema* caused by the solar radiation.

Despite all the information campaigns released by the media, in relation with a solar eclipses cases of solar retinopathy are regularly reported. **In most cases they are provoked by the use of filters that proved inadequate to block UV radiation.**

Solar retinopathy symptoms are the permanent perception of a central scotoma in the visual field (black stain), and eritrosis (red vision).

Luckily, in 90% of cases, such problems tend to recess in a time range spanning from 2 weeks and 6 months. Because of the pathogenic mechanism involved, an early treatment may be recommended with antioxidants and anti-inflammatory (group A,C, and E vitamins, corticosteroids).

## ***Eye Safety***

In sum, the **Sun can be dangerous for the eye**, particularly for young individuals, whose crystalline lens is more transparent. **Always use filters that have been specially tested for the direct observation of the Sun** (UV and IR radiation) and **try to get used to protect your eyes with sunglasses, starting from a very early age.**

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