

Summer is coming! Here's why you need to protect your children's eyes

19 June 2019, by Langis Michaud



Climate change and especially variations in the ozone layer have increased the danger from the sun's harmful rays during the last 25 years. Children are particularly at risk. Credit: [Shutterstock](#)

Should we buy sunglasses for children? And if so, how do we choose a quality product?

It's a question that I get a lot in clinics. I reply that it is good to remember what the sun's effects on eye health are, and how they often act without us even realizing. Exposure to harmful sunlight has increased during the past 25 years, especially with climate change and the variations in the ozone layer.

In considering this, we must first differentiate between the types of radiation—in other words the [rays](#) the sun emits and that touch us, the intensity of the light and the brightness associated with glare.

Emitted rays can be perceived as visible light or remain unseen, as light which is invisible to the human eye. It is the latter that are harmful to [eye health](#). These include short rays—[ultraviolet rays](#) (UV-0 to 400 nanometers of wavelength) and the [longest infrared rays](#), which are more associated with heat and burns. Each of these rays is subdivided into three families: A, B and C.

UVA rays, which are 315 to 400 nanometres, are known for their [harmful effects](#) associated with the development of skin cancer. UVB (280-315 nm) are the most damaging to the structures of the human eye. UVC (0-280 nm) have negligible effects because they are mostly blocked by the [ozone layer](#) when it is in good condition.

Infrared rays, on the other hand, [pose a risk to the retina](#).

Children at risk

The damage to our body tissues is also proportional to the amount of time we spend in the sun throughout our lives. Children are, in theory, the ones who spend the most time outdoors and the cumulative dose of sun exposure is therefore maximum between birth and 16 years of age. That means they are the most at risk today.

The amount of sunlight absorbed also depends on where you live and the time of day you are exposed. We receive more sunlight near the Equator than further north or south. The radiation is also more direct.

The same principle applies to the time of day. One might think that the maximum radiation occurs at noon, when the sun is at its zenith. But solar damage, at least to the eyes, actually occurs more in the morning and afternoon, when the sun is at an angle of about [30 degrees to 40 degrees](#) to the horizon. For example, in Québec, the risk is therefore greatest between 9 a.m. and 10 a.m., then between 3:30 p.m. and 5 p.m. in the evening, during the summer.

Harmful reflection

Reflection can significantly increase harmful radiation. A surface of water such as a lake or river, sand, something white like snow, a wall covering or metal are all mirrors that increase and concentrate

solar rays.

[Snow blindness](#), which occurs when the eye is exposed to radiation on a snowy or icy surface for too long, is an example. [UVA rays that accumulate in the lens promote the development of cataracts](#).

Minor deformities of the bulbar conjunctiva —the white of the eye —are also possible. [Pinguiculas are benign but obvious as small bumps](#), sometimes vascularized, making the eyes chronically red. Pterygium is more damaging. It is a membrane that invades and pulls on the cornea, which can reduce vision. In advanced cases, this requires surgery.



Harmful radiation can be significantly increased by reflection, such as with snow. Credit: Shutterstock

If UV rays reach the retina, they will create a damage that can [contribute to the development of macular degeneration](#). The effects of the solar eclipse are well known —if you look at it without protection, [infrared rays can then burn the retina](#), often irreparably.

Don't let your guard down on cloudy, humid days, however. They also pose an increased risk. Clouds don't block the harmful rays and water particles also act as a mirror. As a result, radiation and the risk of glare is increased.

Glare is the intensity of light perceived by the eye and tolerance to brightness varies from one person

to another. It depends on the amount of retinal pigments they have inherited. People with dark eyes and skin will have more pigments than people with blond hair and blue eyes. The latter will wrinkle their eyes more in front of medium intensity light and will need the protection of a darker coloured filter.

To sum up, [the sun emits harmful rays 365 days a year](#), no matter if it is cloudy or rainy. The damage suffered is proportional to the amount of exposure and children absolutely must be protected. If they are highly exposed and unprotected, they will be among those who will develop cataracts at an earlier age, between 55 and 65 years of age, and run the risk of skin cancer of the eyelids, which are more fragile than the rest of the dermis.

How do we protect ourselves?

There are ways to protect yourself. Wearing a cap or hat helps to limit exposure. Because that is not completely effective, it is also necessary to use sun lenses, which are available in glasses and [contact lenses](#). It is even better to have a combination of both.

Sunglasses must be ophthalmic quality. In other words, the lenses, which are often molded, do not have an effective power and do not create distortion.

Maximum protection is key and the 100 percent UV or UV 400 label is the standard. Avoid UV 100 —without the percentage at the end —or other denominations. It is important to note that UV filters are invisible and the quality of protection has nothing to do with the colour. They can also be added to prescription lenses for those who have to wear glasses on a daily basis.

Finally, the frame must be curved and not leave any space between the bezel and the eye. Otherwise, the window protects against direct radiation, but all the rays that arrive from the side and even from the back will reach the eye. The damage can then be even greater. That is because the pupil is dilated since it is under a sunscreen reducing the brightness, so more harmful rays enter the eye.

The shade is chosen according to activity and visual needs. Grey or green are common and neutral in terms of colour perception. Brown and amber are ideal for driving. Pink/violet increases the contrast on golf greens. Options can also be added, such as polarization, which can reduce glare by at least 50 percent, making it ideal for those working in water, snow or reflective surfaces.

The quality of the [lens](#) is not proportional to the price paid. However, in general, a good quality, break-resistant frame, which is especially good for children, and with adequate ophthalmic lenses will not be cheap.

Opticians and optometrists should be consulted if protective contact lenses are to be used. For active wearers, there are several lens brands that already offer adequate UV protection. A well-known company has also just launched the first photochromic contact lens, which tints when exposed to the sun.

The combination of contact lenses and sunglasses is optimal and ideal. The lens covers the entire cornea and pupil, as well as part of the white of the eye, blocking the sun's rays. Besides cutting the sun that reaches the eyes directly, the lens also protects the sides. The sunglasses also provide total UV protection, reduce glare and the choice of shade ensures adequate patient comfort.

Anyone who is exposed to or works in the sun should also consider applying sunscreen —and then you're ready for summer!

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