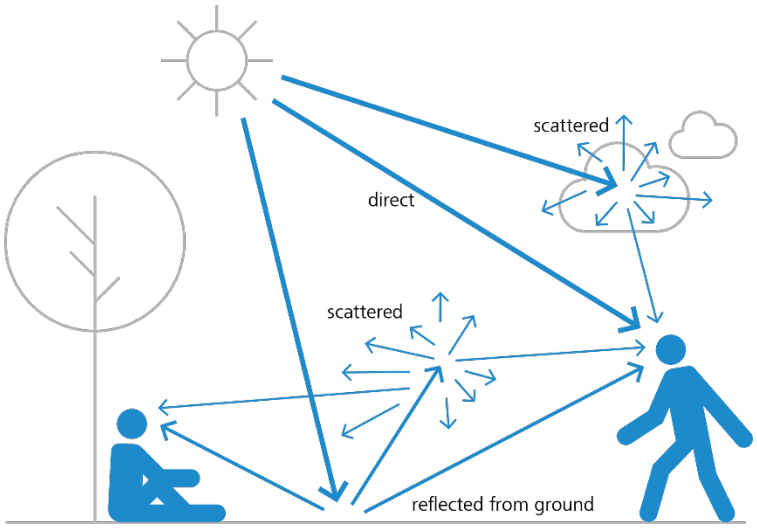
The Underestimated Risk of UV: Scattered Radiation

“Don’t go out in the sun in the middle of the day! Put your sunglasses on!” More and more people are heeding tips like these in order to protect themselves against the sun’s harmful ultraviolet (UV) rays. However, a few years ago Swiss scientists from the University of Lausanne[1] suggested that such measures simply aren’t enough to counteract the biggest UV problem: scattered radiation – and we’re particularly at risk at times when we normally don’t wear our sunglasses. This could be while taking a stroll along a leafy shopping street, or when gardening on a cloudy day.

It’s true that direct UV radiation is normally stronger than scattered radiation, but over the course of the year we are exposed to considerably more UV through scattered radiation than direct sunlight. According to the findings of the Swiss researchers, the direct incident light we’re exposed to when we spend time out in the sun accounts for just 20 percent of our annual UV exposure. Reflected and scattered radiation is responsible for roughly 80 percent of our yearly dose, and we cannot avoid it completely – even when we keep to the shade.



Clouds can increase our UV exposure

Scattered radiation occurs when direct UV rays are reflected by objects and other surfaces, or when scattered by things like clouds and other opacities. A lot of people don’t know that certain cloud formations can actually increase the level of UV exposure compared to a clear day. Some time ago, scientists from Kiel proved that fleecy clouds (Cumulus humilis) in particular make UV radiation that much more dangerous[2].

Climate change exacerbates UV risks

In the years to come, experts predict that the problem will become even more acute. Climate change will cause temperatures to rise – and with them people's need for refreshment outdoors. Preferably the shade, in the morning and in the early evening. So while people are getting out of the sun, scattered radiation and the growing risks associated with UV exposure can lead to serious eye problems.

Cataracts, which cause cloudy vision, is the most well-known affliction that can be caused by UV exposure. We cannot yet rule out a link to macular degeneration, either, as our eyelids are also at risk of UV damage. Five to ten percent of all skin cancer cases relate to the eyelids.

Sunglasses are often removed when in the shade

While most people have learned that they should also apply sunblock when in the shade, they often underestimate the risks for the eyes. Sunglasses protect our eyes, but in the shade their tint is often irritating and so we remove them – and thus expose the eyes to reflected and scattered radiation.

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Standard lenses often offer no more than basic UV protection

Standard clear plastic lenses offer only a basic level of protection. That's because the current industry standard states that lenses should offer UV protection up to 380 nanometers. Unfortunately, this means a large proportion of the lenses sold today do not cover the long-wave UVA range between 380 and 400 nanometers which represent up to 40% of the exposure risk. Many sunglasses have protected up to 400 nanometers for a

long time, while clear lenses have a lot of catching up to do, especially in popular materials such as CR39 plastic and polycarbonate.

New: Complete UV protection for your everyday glasses

ZEISS has bridged this gap with its new ZEISS UVProtect technology, now featured in all clear plastic lenses by ZEISS. This important launch is designed to elevate the standard of care for all patients, to a level that has long been recommended by institutions like the International Commission on Non-Ionizing Radiation (ICNIRP) and the World Health Organization (WHO).

ZEISS UVProtect safeguards the eyes from harmful UV rays around the clock – even when you don't have your sunglasses on hand.

(1) Vernez D et al., Anatomical exposure patterns of skin to sunlight: relative contributions of direct, diffuse and reflected ultraviolet radiation, Br J Dermatol 2012; DOI: 10.1111/j.1365-2133.2012.10898.x

(2) N.H. Schade, A. Macke H. Sandmann, C. Stick: Hochaufgelöste Strahlungs- und Bedeckungsgradmessungen während der Sommermonate 2004/2005 in Westerland (Sylt) https://meetings.copernicus.org/dach2007/download/DACH2007_A_00167.pdf