

For Computer Users everywhere.....

Blue-light Protection Glasses - Why?

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Risks of modern light sources

Due to their high proportion of red in the near infrared and long-wave range, the "good old light bulbs" are easy-on-the-eye. In contrast to that the modern mercury light sources must be viewed much more critically.

Mercury light sources can be found in the backlight of TFT flatscreens (notebooks and computers) as well as in TFT television screens, energy saving lamps and fluorescent tubes. The biggest strain to the eye is caused by TFT screens in front of which people spend many hours daily during their working life. In addition to the radiation load coming from the screen the fluorescent lighting at the workplaces contributes to this negative effect.

Mercury light in TFT screens

Flat screens use mercury light as a backlight. This light is - as in the case of fluorescent tubes - produced by gas discharge. While the spectrum of the white daylight is composed of a harmonic proportion of colours, fluorescent lamps resp. TFT screens radiating mercury light

have a discontinuous spectrum. The latter shows high unnatural short-wave proportions of blue (blue, indigo, violet) with pointed "energy highs". However the red area, which is responsible for promoting blood circulation, shows low energy (see graph).

Spectrum of the Daylight and the discharge lamp



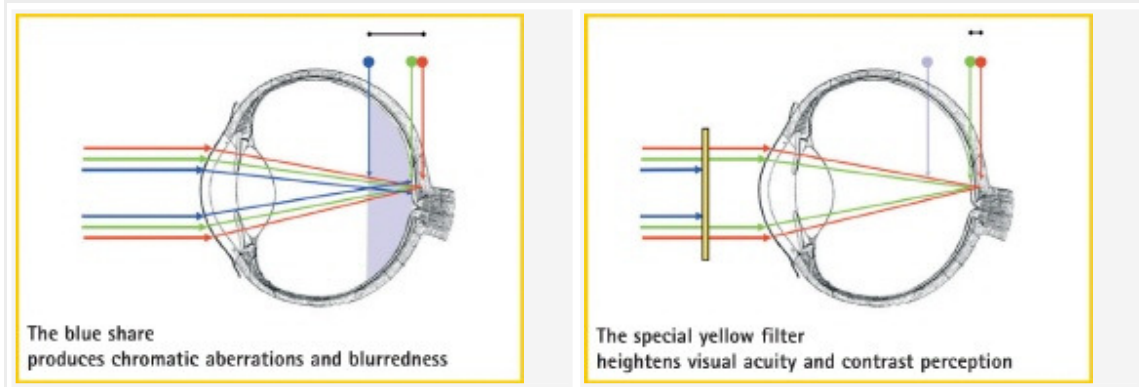
A danger to the retina?

A person doing on-screen work looks directly into the source of light for a long time. This means that the radiation hits - unfiltered and bundled - the spot of the sharpest vision, the so-called macula lutea, also called the "yellow spot" which is located on the back wall of the eyeball. The lens filters ultraviolet light, blue light is not. This proportion of blue light can, in the long term, lead to damage such as age-related macular degeneration (AMD), an incurable disease of the yellow spot. Numerous scientific studies on AMD have proven that blue light can be harmful to the eye. Oxygen radicals damaging cell metabolism in the eye are produced under the influence of blue light.

Blue light impedes vision

Blue light breaks more easily than red light. It is focussed on different level in the eye than long-wave light, which results in chromatic aberrations and blurredness. This is why pilots and athletes often wear yellow glasses, which filter the proportion of blue light, thus heightening visual acuity and contrast perception. Often AMD patients also get prescriptions for yellow glasses or lenses in order to protect their macula from destructive blue light.

Graph - eye lens



Disorder of hormonal balance

Due to its high proportion of blue light mercury light also affects the hormonal balance in a negative way by reducing the production of melatonin and boosting the generation of the stress hormones cortisol and ACTH. Disorders of the hormonal balance can lead to illnesses caused by civilization such as cardiovascular diseases, metabolic disorders as well as disorders of the immune system, cancer, diabetes etc.

No chance for regeneration

Near infrared light is able to activate cytochrome oxidase, an important enzyme for the functioning of the mitochondria and therefore promotes wound healing and repairs tissue damages on a cellular scale. If one spends the biggest part of the day in mercury light and looks into computer screens for a long time the eyes get an overload of short-wave blue light. As this light lacks the proportions of red and infrared light responsible for enhancing blood circulation, the regeneration can often be insufficient.

Brightness control offers no protection

The brightness control of a screen works through pulse width modulation regulating the on-time of the source of light in a certain frequency. Even when reducing the brightness of the screen the pauses between the impulses indeed become longer, but the power of

the impulses is not reduced. Therefore the light impulse always penetrates the body tissues to an equally deep level, even when the eye perceives a lower brightness caused by frequency modulation. Pulsating signals can disturb the biological balance even more than permanent signals. TFT screens only cease to flicker when turned on fully. That is why it is recommendable to turn the screens on fully and wear special **Computer Protection Glasses** from **PRiSMA®**.

Protect your eyesight!

In order to protect eyes from mechanical and chemical danger it is necessary and normal to wear protection glasses. But the danger caused by unprotected work at screens and under fluorescent lamps is often played down or denied by orthodox medicine although the above-mentioned damaging mechanisms have already been proven in cell experiments. Who wants to wait until – maybe only in many years from now - orthodox medicine research delivers the final proof? If you already want to protect yourself today, we recommend you to wear **PRiSMA® Computer Protection Glasses** as a precaution.

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