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## UV Radiation Can Damage the Eyes

Warm summer weather means more people are outside working and playing, soaking up the sun's rays. In a climate where the summer sunshine lasts just a couple of months, people often ignore warnings about being in the sun without protection from harmful ultraviolet rays. While most of us know that the sun's ultraviolet rays can be hazardous to the skin, few realize how dangerous the sun can be to the eyes.

Ultraviolet rays are an invisible form of radiation emitted by the sun that can damage the eyes, skin, and immune system. It can also be produced artificially from welding machines and tanning beds. Three types of ultraviolet rays are given off by the sun. UVC rays, while extremely hazardous, are absorbed by the ozone layer surrounding the earth, and do not pose a threat. UVA rays, the most common form of ultraviolet radiation, penetrate the ozone layer very easily. UVB rays are mostly absorbed by the ozone layer, but some do reach the ground and are dangerous as well. Both UVA and UVB radiation have serious adverse health effects, and should be avoided as much as possible.

UVA rays (which are also given off in tanning beds) can injure the central vision and damage the macula in the back of the eye. These rays are suspected to play a role in development of cataracts, which are a major cause of visual impairment and blindness throughout the world, and macular degeneration, the leading cause of vision loss in older Americans.

An even larger role in the formation of cataracts is played by UVB radiation, as most of these rays are absorbed by the cornea and lens on the front of the eye. Other long term effects include irreversible damage to the retina, chronic eye disease, and the development of skin cancer around the eyelids.

Even short-term exposure to UVB rays can cause a painful sunburn of the eyes. Such corneal sunburn can result from sunlight that is reflected off the beach or pavement in the summer and the snow in the winter. This overexposure to ultraviolet radiation also can cause pain and burning in the eye, red eyes, sensitivity to light, the feeling that there is sand in the eye, and excessive tearing. Normally, it takes several hours after overexposure for these symptoms to appear. While uncomfortable, it is usually temporary.

The best protection from the harmful effects of UV radiation is a wide-brimmed hat and sunglasses. According to Prevent Blindness, about half of the UV rays will be blocked by a wide brimmed hat or cap, and the UV rays that get into the eyes around the sunglasses will also be limited. With regard to eyewear, it is very important to buy sunglasses that contain labels that indicate 99-100% of **both** UVA

and UVB rays are filtered out. (Sunglasses without UV protection cause the pupils to dilate, which allows more UV rays to enter.) Further, wrap-around frames that are large enough to protect the eyes from light entering from all angles are best.

Protective eyewear should be worn every time eyes will be exposed to ultraviolet light, even on cloudy days, in the winter, or sitting under a tree or umbrella at the beach. Contact lenses can be purchased

with UV protection, but sunglasses are still needed to protect the portion of the eye that is not covered by the contact. It is not necessary to purchase very dark or expensive sunglasses; full UV protection is available in inexpensive sunglasses in any shade of lens.

An important point to remember about the damage from UV radiation is that it is cumulative. The longer and more frequent the exposure, the greater the likelihood adverse conditions such as macular degeneration and cataracts will occur later in life. And keep in mind that the sun's rays can still cause harm even on hazy, cloudy days, and in all four seasons. Surfaces like sand, snow, water, and concrete reflect the rays even when you are not directly under the sun, and exposure to damaging UV radiation is increased as you travel toward the equator or at high altitudes. Also be mindful that the sun is strongest between 10:00 a.m. and 4:00 p.m.

To learn more about the harmful effects on health caused by UV radiation, visit Prevent Blindness on the web at [www.preventblindness.org](http://www.preventblindness.org), the American Academy of Ophthalmology at [www.aaopt.org](http://www.aaopt.org) (816-478-1230), and About Vision. Com at [www.vision.about.com](http://www.vision.about.com). For additional information about sun safety or other public health concerns, contact the Central Connecticut Health District at [www.ccthd.org](http://www.ccthd.org) (860-721-2822).