

# Work **Safe!** Bulletin

## ULTRAVIOLET RADIATION

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Ultraviolet (UV) radiation refers to a specific range of electromagnetic frequencies (100 - 400 nm). This radiation may injure a person's skin or eyes. The harm to a person's skin includes erythema (sunburn), accelerated aging and increased risk of cancer. The harm to the eyes is generally photo keratitis (or inflammation of the cornea - e.g. welder's flash) and, at very high exposures, cataracts.

UV is associated with sunlight and certain lamps used for tanning, special effects in the entertainment industry (i.e. black lights), Xenon lights in printing/photography and related industries, and germicidal control devices. Other sources of UV exposure include welding and mercury vapour lamps.

### **Suntanning (Solar)**

The sun is the largest single source of ultraviolet radiation. Ultraviolet radiation from the sun can cause health effects and, although the earth's atmosphere effectively filters out much of the ultraviolet radiation from the sun and people have a natural protective adaptation (tanning), it is still important to follow a Doctors' advice to avoid over exposure and minimize the risk of cancer. Common controls include sun screens, covering skin with light clothing, and avoiding or limiting exposure to direct sunlight.

### **Suntanning (Lamp)**

Tanning with a suntanning lamp requires the same precautions as solar suntanning because tanning is a result of ultraviolet light exposure and any excess exposure can result in sunburn and/or increased risk of cancer. Proper safety precautions, especially limiting the exposure time must be followed.

### **Blacklamps**

Generally, these lamps are not considered hazardous unless an individual is extremely sensitive to ultraviolet light.

### **Germicidal lamps**

Low pressure mercury lamps are commonly used for germicidal applications. The germicidal effect is due to the emission of light at 254 nm which will cause destruction or alteration of cellular genetic material in the bacterium. Manufacturer recommendations should be followed carefully. Selection and installation of such lamps should consider possible harmful human exposure in addition to germicidal effectiveness. People selecting and installing these lamps should be informed and trained appropriately.

### **High pressure mercury lamps**

These lamps are used for lighting on highways and in industry. Generally these have an outer hard borosilicate glass envelope which filters out the majority of the ultraviolet radiation. Lamps with cracks or breaks in this outer envelope should not be used. Check with supplier regarding exposure distances and required shielding.

**Welding**

All welding operations present some hazard to the eyes from the intense light but not all produce sufficient UV radiation to present a UV hazard. Of all welding, electric welding produces the most UV hazard. Gas welding/cutting produces less UV radiation, but Workplace Safety and Health still requires shaded goggles for gas welding. The standard equipment of the welder (face shield, gloves, coveralls, etc) will provide adequate protection from UV exposure. However, nearby workers without this equipment may not be protected, and welding curtains may be necessary to protect them. Information is available to indicate the appropriate lens shade protection for type of welding and workers are advised to consult their employer or supplier for this information.

The Workplace Safety and Health Division of the Manitoba Department of Labour has prepared WorkSafe bulletins to clarify the known risks to health and safety from various forms of radiation energy.

Radiation #180

Lasers #181

Radiofrequency and Microwave Radiation #182