GENERAL UV SAFETY INFORMATION

Safety Measures

When installing and using UV lights, always observe the local authorities' recommendations for use, and local health and safety regulations. Eyes must always be protected, and skin must be reliably protected against excessive radiation from the light.

Warning: The radiation from UV lights, whether direct or indirect, carries health risks for all forms of life.

Because of the dissociation of molecular oxygen, UV radiation at a wavelength of less than approximately 200 nm causes ozone to be formed. In sufficient concentration, ozone is a poisonous gas. It can also damage mucous membranes. If concentrations of 1 to 2 ppm are experienced for several hours, the consequence can be chest pain, headache and dryness and/or irritation of the upper respiratory tract.

Safety at Work

Some of the significant standards applicable are listed below. Most of these directives are recommendations or guidelines. However, they indicate the scientific basis of the way UV works and provide limiting values, as well as information on the safe use of optical radiation.

- A recommendation was issued in 1984 by the ACGIH (American Conference of Governmental Industrial Hygienists) with the title: Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposures Indices (revised at Cincinnati, 1995). These ACGIH guidelines were taken over in all their essentials by the National Institute for Occupational Safety and Health (NIOSH), the World Health Orga- nisation (WHO) and the International Radiological Protection Association (IRPA).
- IRPA/ICNIRP: Guidelines on limits of exposure to ultra- violet radiation of wavelength between 180 nm and 400 nm (1985 and 1989)
- Duchene, A.S.et al. (1991): IRPA Guidelines on protection against nonionizing radiation, Pergamon Press New York ICNIRP (International Commission on Non-Ionizing Radiation Protection): Guidelines on limits of exposure to broadband incoherent optical Radiation (0,38µm to 3µm)(September 1997) IEC 608259: Compilation of maximum permissible exposure to incoherent optical radiation
- prEN 121981: Radiation onto Machinery, dated March 2000, on radiation with photobiological effect

In summary, these guidelines indicate that effective radiation at the (180 nm) 200 nm to 400 nm wavelengths is permissible at the rate of up to 30 J/m² over a working day. For eyes, the effective radiation at the (180 nm) 200 nm to 400 nm wave- lengths should not overstep a threshold of 30 J/m² per working day, and at the wavelengths between 315 nm and 400 nm (UVA) should not exceed 10 KJ/m². These thresholds are valid only for exposure to radiation from artificial UV sources at the place of work. A total annual threshold figure should be set in order to minimize long-term harm to indoor workers. For this purpose, a figure of approximately 4000 - 6000 J/m² could be appropriate. IRPA´s recommendation, concerning the maximum tolerable radiation in an 8-hour day at work, a maximum susceptibility of around 270 nm (UVC).