EMERGENCY RESPIRATORY INFECTIOUS DISEASE HOSPITAL

ELECTRICAL DESIGN RECOMMENDATIONS (SOURCE FROM:
https://mp.weixin.qq.com/s/UEnT8XjQITh8dQEBvQVydg)

Lighting and control system

2.1. Illumination standard: According to "Code for the Design of Infectious Diseases Hospitals" (GB50849), "Code for Electrical Design of Medical Buildings" (JGJ312), "Design Standard for Architectural Lighting" (GB50034), etc.

2.2. Selection of light sources and lamps: High-performance, high color rendering light sources should be used, and LED light sources should be selected, but the main technical parameters should be clear, such as: power factor> 0.9; blue light hazard index is RG0 (non-hazardous), pollutants The treatment room and morgue use RG1 (light danger level); the color temperature of the light source is 3300-4000K, and the ward should choose dual-color temperature lamps, and the rest of the glare and color rendering index should be implemented.

2.3. Medical Field The lighting fixture designed to avoid glare bedridden patients, patients avoid restricting surface light source directly or lamp brightness, light should provide a healthy and comfortable environment.

2.4. The lighting fixtures for negative pressure isolation wards and clean rooms are clean and sealed, and should be installed on the ceiling. Lighting fixtures should be smooth and easy to disinfect.

2.5. Sterilization lamps should be installed in clean corridors, dirty toilets, toilets, waiting rooms, consultation rooms, treatment rooms, wards, operating rooms and other places where sterilization is required. According to the requirements of "Disinfection Technical Specification for Medical Institutions" (WS / T 367), the height of the lamp tube is 1.8-2.2 meters above the ground, and the number and power of UV germicidal lamps installed must meet ≧ 1.5W / ㎡ (average value). The germicidal lamp and other lighting fixtures are controlled by

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different witches. The switches should be easy for medical personnel to identify and operate. The height of the switches should be 1.8m from the ground. For germicidal lamps in public places such as waiting rooms, corridors, or places where people are usually stranded, indirect lamps or lamps with adjustable illumination angles should be used. The UV germicidal lamp should be installed in a place where air is easy to connect. In places where people are normally active, ultraviolet light must not be directly in the field of view of medical staff and patients. Lamp control should be controlled by time, and the time of delay switch for lighting is set to about 10min. Infectious disease clinics and activities can be performed when there is no one. The direct irradiation of the germicidal lamp is performed, and the irradiation time is manually controlled as required. The ward should be equipped with a sterilizer socket. The germicidal lamp switch should have measures to prevent accidental opening.

2.6. Lighting control: local control is used in consultation rooms and wards; control panels are set up in medical staff management offices such as clinics and nurses in corridors and entrance halls, and intelligent lighting control systems can be used when conditions permit; automatic light switching Scenes. The lighting fixtures in the polluted area should be controlled in the clean area, and the power distribution device should be set in the clean area.

2.7. At the entrance of the operating room, the examination and treatment room of the rescue room, the nuclear medicine examination and treatment room and other rooms should be set up with work warning lights. X-ray diagnosis room, accelerator treatment room, nuclear medicine scanning room, gamma camera room and operating room should be provided with red signal lights to prevent accidental entry, and the power of the red signal lights should be interlocked with the unit.

2.8. The emergency lighting system shall be implemented in accordance with the "Technical Standards for Fire Emergency Lighting and Evacuation Indication System" (GB51309) and the standard atlas "Emergency Lighting Design and Installation".

2.9. Evacuation instruction lighting: Set up evacuation instruction lighting fixtures according to the evacuation route to ensure effective evacuation during a fire. At the same time, the functional requirements of pedestrian flow and logistics passages in polluted, semi-polluted and clean areas should be considered.

2.10. The emergency lighting system should be designed in combination with the standby lighting in medical places.

2.11. High temperature lamps, etc. should not be directly installed on combustible objects or take other fire prevention measures. When switches, sockets and lighting fixtures are close to flammable materials, fire prevention measures such as heat insulation and heat radiation shall be taken.

2.12. The ward and aisle lamps should be remotely controlled, which should be able to meet the needs of different scenarios such as patients resting at night and medical staff working at ordinary times.

2.13. The ward and the corridor of the ward area shall be provided with night lights, such as night lights, and the bed should have one light per bed, which can be controlled separately at the bedside and the doorway of the room.

2.14. Smart sensor lamps should be adopted for cleaning corridors, dirty toilets, toilets, etc., to automatically turn on the lights, delay turning off the lights or maintain the basic brightness to reduce hand contact infection.

2.15. The medical staff's office rest area shall be provided with a single-phase socket for living purposes, and shall be separated from other power distribution circuits. Corridors shall be provided with separate single-phase outlet power distribution circuits.

2.16. The lighting circuit on the multifunctional medical trucking shall be equipped with a residual current protection device.

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2.17. The lighting control of the negative pressure ward shall be controlled in-situ and in the clean area.

2.18. Reliable sealing measures shall be adopted for the pipes and junction boxes leading to the lighting, power and control circuits of the negative pressure ward.

2.19. Electricity shall be reserved for facilities such as isolation windows, sensor windows, sensor faucets, etc.

2.20. The auxiliary electrical devices of large-scale medical and medical technology equipment (such as special air-conditioning equipment, etc.) are powered by special circuits and must not be mixed with the power supply circuit of medical and medical technology equipment.

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Important Notices (Read before install the light modules)

UVC exposure is unlikely to cause acute or long-term damage to the skin but can cause severe acute damage to the eye and should not be permitted at all from any tanning device."
Don't look at the LED UV-C Direct

Find the right module for your application.

Leverage the experience and expertise of Miron's patented, international Application Engineering team to accelerate your next disinfection project. From medical equipment to commercial, hotel, hospital and residential air conditioning systems to ventilation systems and more, Miron LED Light Engines can be used in surface applications to prevent the growth and spread of mold, yeasts, and bacteria.

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What is Ultraviolet – C

(source fromhttp://www.uvresources.com/blog/uv-c-lamps-staying-safe/)

Light in the Ultraviolet-C (UV-C) spectrum has proven effective in killing virtually all known microorganisms, making it the ideal solution for cleaning HVAC cooling coils and decontaminating the upper air in public spaces such as schools and hospitals.

The potency of UV lamps, however, means that care must be taken when servicing these systems. Unlike some hazards, exposure to ultraviolet light does not offer a natural avoidance response (e.g. squinting eyes in bright sunlight) or a physical cue that protection is necessary (e.g., heat radiating from a hot pan). Furthermore, the physiological effects of UV-C exposure are delayed and can appear up to six hours later.

While damage from UV-C is temporary, the HVAC/R industry takes steps to safeguard service personnel from avoidable ultraviolet exposure and the consequences of its short-term or chronic effects.

The Power of UV-C

It's first important to understand the properties of UV-C and how it can pose a threat if handled improperly.

UV light, also known as ultraviolet germicidal irritation (UVGI), comprises a segment of the electromagnetic spectrum between 400 and 100 nm. The UV segment has different sections, labeled UV-A (400 to 315 nm), UV-B (315 to 280 nm) and very high energy and destructive UV-C (280 to 200 nm).

Most of us are familiar with the harmful effects of UV energy transmitted by sunlight in the UV-A and UV-B wavelengths, giving rise to UV "sunburn" inhibitors, or sun tan lotions. We are also familiar with products engineered to withstand the effects of UV radiation, such as plastics, paints, and rubbers. However, unlike the UV-A and UV-B wavelengths, the UV-C band has more than twice the electron volt energy (eV) as UV-A, and it is well absorbed (not reflected) by organic substances, adding to its destructiveness.

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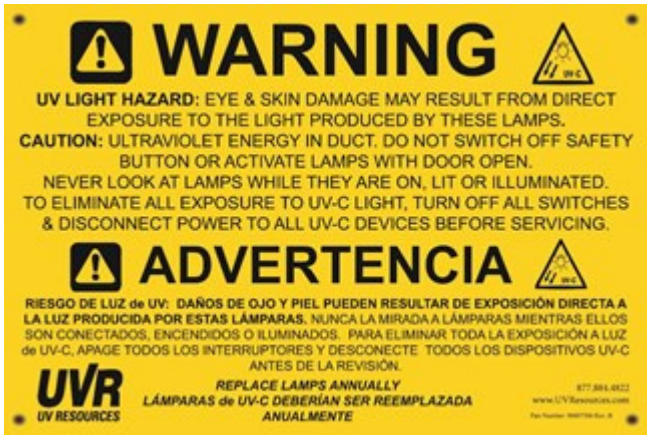
UV-C Safety Strategies



Therefore, it is important to follow common-sense safety strategies when dealing with UV-C lamps. Many HVAC/R and UV-C equipment manufacturers have voluntarily implemented safeguards against the risks of UV-C exposure. Instructions and signage advise service personnel that the UV system should be turned off before performing any work in the air handling unit (AHU). These safeguards include:

1. **Placing warning labels** near all access panels or doors to a plenum containing UV lamps, as well as on panels or doors adjacent to AHU sections where UV radiation may penetrate or be reflected.
2. **Installing electrical disconnect devices** on AHU lamp sections, so that the opening of any access point de-energizes the UV-C system. Some manufacturers include a door safety switch or lockout/tagout feature to keep the AHU closed until the UV lamp power has been disconnected. These safety devices should never be overridden
3. **Instructing service personnel to never look directly at UV-C** without adequate eye protection. Installing a view port is the safest way to view the light, as it will block the UV-C bandwidth. Ensure that the viewport is constructed from UL classified, fire resistant wired glass and is sized and located to allow an operating UV system to be viewed from outside of the HVAC equipment. Include proper safety signage to form a complete viewport/signage assembly.

4. **Making it a policy to never enter the plenum** where UV-C lamps are active. If it is absolutely necessary, wear personal protective equipment including UV safety goggles, UV face shields, long-sleeved, tightly-woven clothing that covers much of the body and gloves.

These safety precautions will help ensure service personnel are protected from accidental exposure while maintaining the effectiveness of UV-C to eradicate biological contaminants.

As an added value, UV-C's ability to constantly clean the interior workings of the AHU can extend the equipment's life for prolonged savings. Biofilms on coil fins hamper their ability to remove heat from the air. If mechanical cleanings are incomplete or ignored, up to 25 percent of cooling capacity can be lost in as little as five years.

When used correctly, UV lighting in HVAC systems and/or the upper air can do much to save energy, raise HVAC/R efficiency, reduce maintenance and boost indoor air quality.

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