CIRSA HAZARD ALERT

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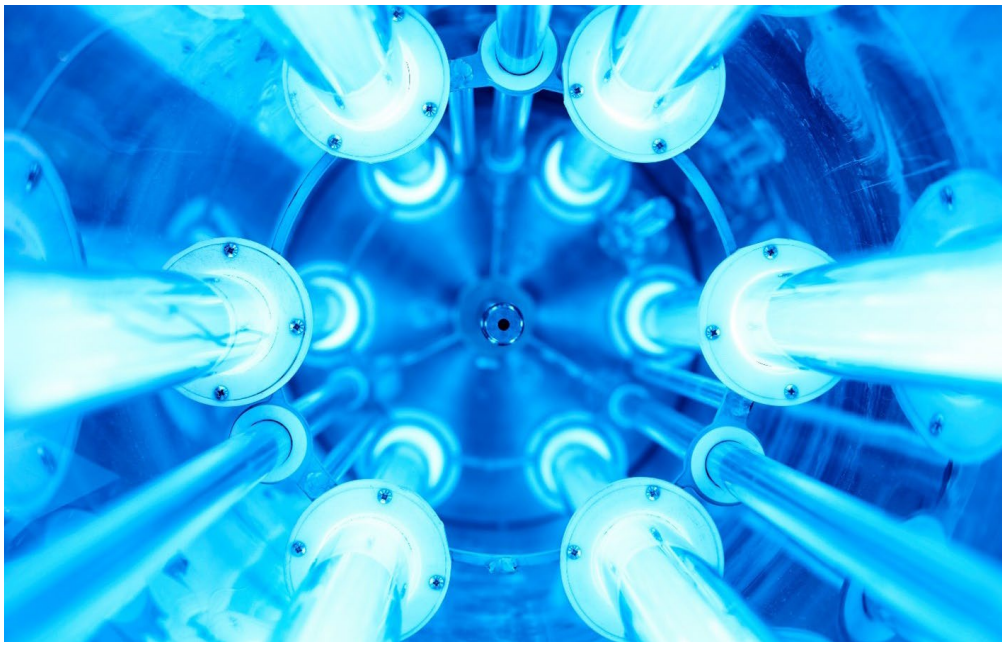
Hazard Alert – UV Light in Water, Wastewater, & Aquatics Facilities



Chlorine has been a common disinfection method in water and wastewater facilities for many years. While chlorine gas is inexpensive, it is highly toxic and must be handled appropriately. Alternatively, a liquid solution of sodium hypochlorite can be used but has its own health hazards.

The use of Ultraviolet (UV) light for disinfection is becoming more common in water and wastewater treatment facilities throughout Colorado every year because it has numerous benefits over chlorine. It is also becoming common to use UV light to treat swimming pools and hot tub water in recreational centers and aquatics facilities.

UV light is effective at inactivating most viruses, spores, and cysts. It is a physical process, not a chemical one, and leaves no residual effect that can be harmful to humans or aquatic life. It also requires less contact time than other common forms of disinfectant and requires less space. While it is much safer than chlorine, it does not come without its own unique hazards.

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UV Light in Water, Wastewater, & Aquatics Facilities (cont.)

Potential hazards include mercury exposure to broken UV lamps and direct exposure to UV light generated by the devices. The health risks from UV light exposure are similar to those from direct exposure to sunlight but intensified. Workers exposed to UV lamps can experience a sunburn (erythema) or a feeling of sand in the eyes (photokeratitis), commonly known as welder's flash, for hours after the exposure.

While these devices are designed to operate in enclosed vessels, multiple CIRSA members have experienced claims associated with workers who have opened the equipment to perform maintenance while the lights are in operation. This has led to injuries for water and wastewater employees.

Injuries can occur while performing lamp maintenance and replacement, monitoring system operation, or servicing other components such as ballasts or quartz sleeves. The way to prevent injuries while servicing these devices is to follow the proper Lockout/Tagout process for the equipment. The power supply should be disconnected, and the correct lockout devices and tags applied and verified prior to being opened. Refer to the manufacturer's operations manual for specific guidelines on how to control the energy source, and the organization's Lockout/Tagout Policy should always be followed.

Sources:

- Wastewater Technology Fact Sheet - Ultraviolet Disinfection
- Ultraviolet Disinfection in Drinking Water Treatment
- Environmental Health & Safety Occupation Safety Unit - Ultraviolet Light Safety Guidelines
- UV vs. Chlorine for Wastewater Disinfection