LIFESAVING SOCIETY®
The Lifeguarding Experts

Pool Lighting – Does it Help Your Lifeguards?

Every swimming pool must be well lighted to allow the customers to safely enjoy the facility and to enable the lifeguards to effectively supervise the bathers. This lighting may be supplied by a combination of natural lighting and artificial lighting. The Alberta Building Code requires that the lighting system deliver a minimum of 215 lx of light to the deck level and water surface of an indoor pool. This lighting level will provide enough light for safe use of the facility.

While the lighting system used in a facility will help lifeguards be able to see the customers, it can also cause problems. Glare at aquatic facilities is a frequent problem for lifeguards. If there is glare on the water, the lifeguard cannot see below the water surface. She is unable to scan the pool bottom or through the rest of the water column. If the glare is very strong, the lifeguard may not be able to observe bather details such as facial features or expressions. The glare causes blind spots which must be managed by the lifeguard.

Glare is simply reflected light. We see glare only if the light is reflected off the water into the lifeguard's eyes. Therefore, the light source is in front of the lifeguard. When establishing lifeguard patrols/stations or designing a facility with lifeguards in mind, glare can be eliminated by locating the light source behind the lifeguard.

The light causing the glare is reflected off the water into the lifeguard's eyes. The height of the eyes above the deck will affect how much glare is seen. Generally light from a low level source (shallow angle of incidence) such as windows at deck level will cause a lifeguard standing on the deck to see glare. Putting the lifeguard in a lifeguard chair may put the lifeguard's eyes above the reflected light and eliminate or reduce the glare. Facilities which position the windows high up the pool wall find that the glare is reduced or eliminated. The steep angle of incidence causes the light to be reflected up above the lifeguard's eyes. Unfortunately the vast majority of pool designers choose to include low level (glare producing) windows in their designs.

Glare from natural light sources (windows) will change in intensity depending on the season and the latitude of the facility. In a Canadian winter, the sun angle is low and causes a significant increase in glare in the winter months. In summer with the higher sun angle, the glare problem is reduced. This effect is increased if the facility is located farther north. The time of day will also affect glare depending on the orientation of the facility windows relative to the sun. The low sun angles of morning and late afternoon produce more glare and this effect is aggravated if the pool windows are pointed to the east or west. Facilities with south facing windows experience glare throughout much of the day. North facing windows produce the least amount of glare.

Another source of glare is the pool's light fixtures or even the lights from poolside offices. If the fixture directs the light straight down over the deck (90 degrees to the deck) glare is eliminated. However many pools have light fixtures over the deck which are angled to cast the light over the

pool water. These fixtures will cause glare on the opposite side of the pool. Light fixtures located over the pool water surface will also produce glare.

Glare is a factor which should be identified and managed when establishing lifeguard stations. When developing lifeguard positions for many pools the Lifesaving Society finds that a fixed lifeguard station often will not eliminate blind spots caused by glare or other design features. Consequently lifeguards and facilities often choose to use "lifeguard patrols". These patrols are optimized to minimize the length of time that any blind spot goes unobserved.

Glare from the windows of a pool can be controlled by using blinds to block the problem light source. Polarized sunglasses can be used by lifeguards to reduce glare. A polarized lenses allows light to pass through the lense in only one plane. This will dramatically reduce the glare by excluding much of the reflected light. Lifeguards at outdoor facilities should wear polarized sunglasses. They may also be an effective solution in some indoor pools.

Most facility designs do not take glare or other lighting problems into consideration at the design stage. It becomes a problem for the lifeguards to manage after the facility opens. This is one of the issues the Lifesaving Society addresses when architects consult us about facility design. The Society also provides assistance to help facilities establish lifeguarding systems that can minimize the negative effects of pool lighting.

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