

Introduction

Early ice resurfacers had open snow dump tanks which were sometimes used to place extension ladders in to gain the necessary height to accomplish a bulb change.

Alternatively, scaffolding was erected and a worker climbed it – they were then pushed from fixture to fixture while at the top of the scaffold. Times have changed – have you?

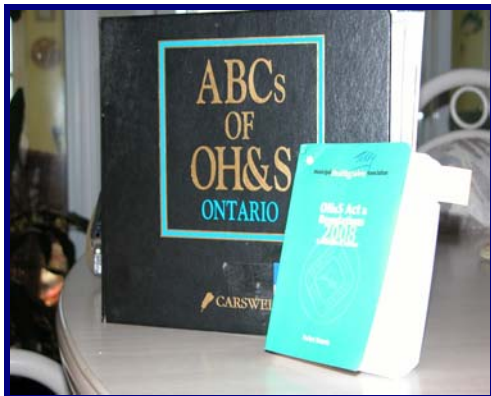
WSIB Facts on Worker Falls

- In 2000 to 2001, 20 workers died falling at work
- One in every six lost time injuries (LTI), in Ontario, is caused by a fall
- 80 people are injured every day in a fall at work, that's one every 20 minutes
- Every workplace should have workplace standards, expectations, and rules that consider industry and regulatory guidelines
- All workers need to know about them while supervisors must ensure these standards are enforced

An arena ice surface, hall, vestibule or roof over an aquatic bowl often presents a challenge to facility staff when light bulbs or other work must be completed. Merely taking out the ladder, scaffold or aerial work platform to get the work done is no longer acceptable. A detailed **Job Hazard Analysis (JHA)** with a written procedure must be conducted as part of the task.

Occupational Health and Safety Act (OHSA)

What does the OHSA say about working at heights?



The employer should develop safety procedures for each job task that requires a worker to work at a height greater than three metres.

Workplace Parties - General Responsibilities

1. The employer shall provide information, instruction and supervision to protect the safety of workers who may be injured by falling:
 - From a height within a structure;
 - From a ladder;
 - Through openings in a work surface;
 - While working on a level surface; or
 - While working on and around machinery.
2. The supervisor should ensure that a worker who uses a fall protection system to prevent a fall is adequately instructed in its use by a competent person.
3. The supervisor should ensure that a fall protection system is used whenever a fall from a height involves a risk of injury and that the components of the fall protection system are adequate to protect the worker.
4. The supervisor and workers should keep work surfaces clear of slip and trip hazards to the greatest extent possible.
5. Workers should:
 - Follow the instruction and training provided by the employer;
 - Learn to recognize potential slip and trip hazards;
 - Report to their supervisor, anything they feel could be a threat to sound footing.

Real Life Experiences

The Municipality of West Nipissing experienced a tragic accident when a young sub-contracted electrician who was conducting work on the pool lighting system had his lifting device flip over. The worker was located on the pool deck with the flip-over taking him to his death in the

empty pool. West Nipissing staff worked closely with Ministry of Labour inspectors in their investigation which determined that the community was not at fault. Regardless of the outcome, the West Nipissing recreational staff has since revisited all policies, procedures and staff training requirements associated with working at height – they encourage their professional recreation colleagues to do the same!

Tools for Getting the Job Done Safely

Fall Protection Systems

A system designed to protect workers from the risk of falling when working at heights.

Examples of fall protection systems include safety harnesses and lifelines; the use of guardrails or barriers; and, travel restraints that limit a worker's movement to a safe area.



Ladders

1. The employer should ensure that a portable ladder has non-slip feet, is placed on firm footing, and has no broken or loose members or other faults.
2. If it is necessary to work on a ladder for an extended period of time, without changing location, the employer should try to provide scaffolds or other work platforms to reduce the risk of falling.
3. When a portable ladder exceeds six metres in length, and is not securely fastened or is likely to be endangered by traffic, it should be:
 - Held in place by one or more workers while being used; and,
 - Inclined so that the horizontal distance from the top support to the foot of the ladder is not less than one quarter and not more than one third of the length of the ladder.

Remember to choose the right ladder for the job! Changing light bulbs involves electricity and as such a ladder that does not conduct electrical current should be selected.



Scaffold

A scaffold can be generally defined as a temporary structure supporting a platform positioned at an elevation above the ground. Its purpose is to provide a working surface to support workers and their necessary tools and material.

As required under the OHSA - any worker using a scaffold must be properly trained in its use prior to being allowed to erect or dismantle this equipment.

Aerial Work Platforms

Aerial-work platforms (Genie Lifts) were originally designed to be used by people who are trained in the trades (e.g. iron workers, welders, masons, etc). These systems have found a secondary home in recreation facilities as they allow for one or two workers and their equipment to be safely lifted.

These devices must only be used by "competent persons" trained in the use and when not in use, they should be safely stored with no available access to untrained persons.



Creating a Procedure

The design and layout of recreation facilities across Canada contain many variables and unique designs. As such, one method would not work in all environments. Ontario's Ministry of Labour recognizes through data collected from workplace accidents that falls are an ongoing health and safety pressure point and as such make "working at height procedures/activities" an important part of their inspection review process.

Many recreation managers recognize the risks associated with working at height and as such opt to outsource the work to professionals with experience with working at heights and with electrical safety. When outsourcing work be reminded that such tasks require an "owner" review in respect to the sub-contractors written procedure, competency of persons that will be conducting the work and equipment that is to be used. Outsourcing does not completely reduce the owner's level of health and safety responsibility and accountability.

A reminder that when outsourcing is used for major re-bulbing projects that the workplace still requires a detailed procedure for staff who conduct work above 3m. And further, that the owner has a role to sign-off on such work!

Facility Life-Cycle Planning

The key to safely getting this task done might be life-cycle planning. Choosing the right bulb with the correct lumen level and life expectancy based on the number of "on/off's" will greatly reduce the need to replace singular bulbs as well as how many times staff will need to work at height.

The ORFA has recommended for many years that bulbs be changed in mass. This would have the owner choose a bulb – let's say with a 12,000 hour life expectancy – the facility manager would then estimate based on the operational schedule when the bulbs would be nearing the end of their life (keep in mind that as a bulb ages it loses its brightness and as such, they might best be changed before they start to burnout). Once the estimate is made the mass change of all lights is planned for – in bulk.

The benefits of this approach include:

- Creating an area that is equally bright over the entire surface
- Bulk purchasing of bulbs in-advance based on a planned replacement thus

receiving the best cost per-unit – and all the same colour bulbs

- Scheduling staff time to its full potential
- Tracking bulb life for warranty purposes
- Being able to safely plan the work.

Example Life-Cycle Plan

The arena and pool use the same type of 1000-watt metal halide bulbs, there are 28 bulbs in the arena and 16 in the pool area, for a total of 44-bulbs. We should keep 2 additional bulbs on site for emergency replacement situations bringing our need to 46 bulbs. The bulbs are rated for 12,000 hours. The arena and pool both operate 7-days a-week with full schedules from 8am-midnight each day. The lights are on 16-hours a-day x 7-days a week for a total of 112 hours per-week x 52 weeks = 5824 hours per-year thus requiring the bulbs to be changed every 2-years.

Bulb Replacement Cost Estimate

- 46 bulbs x \$100.00 = \$4600.00
- Outside Contractor with lift 8-hours x \$150.00 per-hour = \$1200.00

Total budget required - \$6,000.00

Planning the work in downtime – when the pool is empty or ice is out should be considered whenever possible.

Workers who change bulbs when the water is in the pool run the risk of having broken glass or other matter dropping into the water. If bulbs are to be changed with water in the pool a back-up collection system should be in place to reduce the risk of falling debris from above.

Workers should **NEVER** be working at heights when the general public is in the area!

Quick Facts

- Know your bulbs! Not all bulbs give the same light intensity, colour or have the same life expectancy.
- Read the bulb start-up requirements carefully. To gain maximum life expectancy some bulbs need to burn continuously for 48-hours. Failing to do so can reduce the bulb life by as much as 25%!

Changing of Light Fixture Ballasts

Facility staff are cautioned to not overstep their boundaries with respect to light fixture ballast changing! Working safely with electricity and making electrical repairs of any kind in a public building is strictly governed by the Electrical Safety Authority (ESA).

347-volt circuits are commonly used in recreation facilities for lighting applications. The reason for the circuit's popularity is its economic viability. First, a 347-volt circuit can accommodate more light fixtures per breaker than a 120-volt circuit. Second, a 347-volt circuit can be directly wired to the building with no need for a transformer. Working with 347-volt circuits entails inherent risks and dangers. Fatalities and injuries have resulted. For work on 347-volt circuits, facility managers must use only licensed electricians.

Persons who work with electricity in a public facility must do so under an electrical permit or through a relationship with ESA as part of a facility safety program. Understand the legal expectations to electrical work prior to undertaking any upgrade or repair.

<http://www.esainspection.net/>

Bulb Disposal

"Think Green" - Over 300 million mercury-containing bulbs are discarded each year. Most of these bulbs are still discarded with municipal solid waste that is ultimately land filled or incinerated. These disposal methods can lead to a release of elemental mercury into the environment through breakage and leakage and ultimately contaminate the food chain.

Virtually all components of a fluorescent bulb can be recycled. The metal end caps, glass tubing, mercury and phosphor powder can all be separated and reused. Recyclers often sell the metallic portions as scrap metal. The recycled glass can be remanufactured into other glass products. The mercury can be recycled into new fluorescent light bulbs and other mercury-containing devices.

Take Back the Light is a government initiative to reduce bulb waste and the ideal solution for businesses and institutions currently using fluorescent lamps, as it provides a cost effective and streamlined approach to handling spent fluorescent bulbs and other lighting waste.

Participation is easy. Organizations are invited to register online at www.takebackthelight.ca

Disposing of light bulbs correctly lends to our industries commitment of being "environmental leaders"!

Locking Out

The **Ontario's Electrical Safety Code** (OESC), Rule 2-304 (1) stipulates that no repairs or alterations shall be carried out on live electrical equipment, and that adequate precautions such as locks on circuit breakers and switches, warning signs, etc, shall be taken.

7 Key Steps Towards Electrical Safety at Work

1. Workers, supervisors and facility/business owners must follow safety requirements defined by the Ontario Electrical Safety Code & the Occupational Health and Safety Act.
2. Written safety procedures are required where anyone is working on electrical equipment.
3. Supervisors and owners must communicate potential shock and arc flash hazards to workers as defined by an electrical equipment hazard analysis.
4. Safety procedures and requirements must be followed by anyone working on electrical equipment.
5. Workers should Lock-out & Tag-out electrical systems and equipment when doing electrical maintenance work.
6. Electrical equipment should be tested to ensure it is de-energized - the use of a multi-meters with fused leads is recommended.
7. Written procedures should include requirements for Personal Protective Equipment.

The Score Clock



Older score clock technology have a standard bulb type lighting system. A detailed procedure with a life-cycle mass replacement schedule for changing these bulbs needs to be developed. Newer LED technology has a significantly increased lighting life and should be considered when updating any timing device as they are more energy efficient and lower in maintenance.

Conclusion

Creating a procedure for changing light bulbs above 3m is considered a site specific responsibility. Selecting the right equipment for the task is one of the most important parts of the process. When the work is to be conducted and by who are the next key steps.

Wear a hardhat, or other approved headgear when working above ground. After all, your head becomes the highest point when in the air.

Worksite assessments are particularly important. Risk of contact with electrical power, tripping or unprotected falls are all possible negative outcomes to a poorly prepared worker who may be merely thinking "Its only a bulb change, I can handle it myself".

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**AMERICANA RESORT INC. FINED \$60,000 AFTER TWO WORKERS
INJURED**

ST. CATHARINES, Ont. – Americana Resort Inc., the operator of the Americana Conference Resort and Spa in Niagara Falls, Ontario, was fined \$60,000 on January 16, 2009, for a health and safety violation after two workers were critically injured. On June 19, 2007, an Americana Resort employee and an employee of an electrical and fire safety company were attempting to replace a fallen light fixture in the ceiling of the resort’s water park and swimming pool. They were driving a boom lift work platform to reach the work location when one wheel of the boom lift vehicle broke through a wooden cover on a sump reservoir beside the pool. Both workers were anchored to the lift’s basket which had been extended to a height of 45 feet. It tipped over and one worker struck a lifeguard chair and the other struck a pool ladder. Both sustained serious injuries.

A Ministry of Labour investigation found that the Americana Resort employee, who was operating the boom lift, was not trained in its operation. Nor was the worker aware the cover of the sump pump was not capable of supporting the weight of the machine. Americana Resort Inc. pleaded guilty to failing, as an employer, to acquaint a worker of the hazard of driving a boom-supported elevating work platform over the wooden covering of a sump reservoir. This was contrary to section 25(2)(d) of the Occupational Health and Safety Act.

The fine was imposed by Justice of the Peace Bruce Phillips in the Ontario Court of Justice, St. Catharines. In addition to the fine, the court imposed a 25-per-cent victim fine surcharge on the total, as required by the Provincial Offences Act. The surcharge is credited to a special provincial government fund to assist victims of crime.

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