

Official Publication of the Building Operators Association (Calgary)

January 2025











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Important Phone Numbers

Emergency	911
Alberta Boiler Safety Association	403 291 7070
Alberta Labour (Emergency)	403 297 2222
Buried Utility Locations	1 800 242 3447
City Of Calgary (All Departments)	311
Dangerous Goods Incidents	1 800 272 9600
Environmental Emergency	1 800 222 6514
Poison Centre	403 670 1414
Weather Information (24hr)	403 299 7878

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<u>I hope this message finds you</u> <u>& yours well and in good</u> <u>health</u>

Happy New Year!!!

What kind of New Year resolutions if any, will you commit to? I remember last January I promised to lose 10Kg of fat and I have only 10Kg to go, and so it goes.

Keeping our buildings in good health also means making commitments. Nothing gets better if left alone. It is not only important to do the preventive maintenance in our buildings to perform the manufacturer's recommendations, monthly quarterly, annually, but to also take stock and judge how it is performing as commissioned or sometimes it is called recommissioning RCx. Commissioning of existing buildings is quickly becoming one of the most important topics in the building management arena. There are a lot of buildings out there that have never been commissioned. Even today, with mounting evidence of resulting expected benefits with the push of ESG (Environmental Social Governance), very few new buildings undergo a complete commissioning process. Instead, new buildings are typically turned over to the building operating staff with operating problems in place, incomplete documentation, and minimal operator training for buildingspecific equipment. The same problems occur with major equipment installations. Then, during building and equipment operations phases, the overall efficiency of mechanical systems drift. short-term degrades as sensors adjustments are made, tenant needs change, and so on. Even after adjustments are made, perhaps through a one-time recommissioning effort, performance degradation is continuous.

Where does one start? Go for the easy things to begin with. Schedule confirmation is an easy

one. So often we override equipment or lights on or setpoint controls and forget to release them.

This verifies and restores equipment operation with original design intent and/



or to meet current operating needs. Making sure the field readings agree with the data readings. Such things as looking at damper position and exercising them and viewing the dampers viewing that they are in agreement. The same for valve positions and temperature readings all of these are important for the control of costs and operations of the building systems.

There is an association out there: Building Commissioning Association (BCxA), if you need more information or want to go further.

The Building Operators Association will delay the trade show to the spring. We send regrets and will try to arrange it to not coincide with the oil and gas shows that typically run during the spring dates. I will contact the companies that made inquiries to let them know of the proposed schedule.

By now you should have received the membership dues notification. I hope you will process it asap. It is our source of revenue that allows us to continue. Please, support us as we support you.

See you at the next meeting, January 14th at the Danish Canadian Club.

Smiles)) Les Anderson



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TEST YOUR OPERATOR IQ!



Try our monthly Operator IQ challenge...answers on page 28

- 1. Gas-fired infrared heaters use the principle of:
- a. heating a gas
- b. heating a solid surface
- c. heating a liquid
- d. heating a porous material
- e. all of the above



- 2. In an electric snow melting unit, a thermostat should be used to automatically shut the system down when the outdoor temperature is above:
- a. 0°C
- b. 1°C
- c. 2°C
- d. 3°C
- e. 4°C
- 3. In an internally fired, gas fired infrared heater, the surface temperature is about:
- a. 300°C
- b. 400°C
- c. 500°C
- d. 600°C
- e. 700°C
- 4. In an open wire type heating element, the resistance wire is made of:
- a. tungsten
- b. magnesium oxide
- c. mica
- d. steel
- e. nickel-chromium
- 5. Infrared heaters are usually mounted:
- a. overhead
- b. on walls
- c. in floors
- d. under windows
- e. over doors



Emergency Power Plans: Why Every Facility Needs One - And What Yours Should Include

Bill Henderson

I was driving home with my youngest daughter from the market last Saturday morning when our conversation was interrupted by the piercing screech of another EMERGENCY ALERT on our cell phones.

Tornado Warning! I may be giving away my age but when I was a kid, tornados were something that only happened in Kansas. It was a rare affair for a tornado or hurricane like Hazel in 1955 to arrive this far north.



Unfortunately, as you think back over the past few years you realize, this is the new normal. Forest fires, atmospheric rivers, storm surges from hurricanes., heavy snow, hail, canyon rockslides damming up rivers flooding out communities downstream or two meter water mains bursting and flooding out a large section of downtown Montreal. The list of possible climate calamities seems endless.

If you have been thinking that planning for a climate emergency was something you could keep putting off into the future....THE FUTURE IS NOW!

To ensure readiness across all locations in the event of a local or regional emergency it is crucial to develop a comprehensive emergency power supply plan. The following are key points to consider:

Assess Power Requirements

• Determine Critical Loads: Identify essential equipment and systems that

require power during an emergency (e.g., lighting, refrigeration, communication systems). Ensure that critical operations can continue smoothly during an emergency.

Power Consumption Analysis: Calculate the power requirements for each location to ensure that generators and backup systems can support these loads.

Backup or Standby Power Systems

Standby Generators: Often facility managers with a generator believe they have their power generation needs covered in an emergency. However, depending on the age and type of facility, the generator could simply be a Life Safety generator that only powers the basics like hallway lighting to get people out of the building safely.

A standby or backup generator powers all loads considered critical to the normal operation of a building should utility power fail



for an extended period. In many scenarios with region wide emergencies this can mean days or even weeks. If you are to be prepared for an emergency without utility power, you need to know and understand the difference between a Life Safety and Standby generator and the electrical equipment that each generator panel powers.

For those facilities without sufficient standby power generation, short term portable generators need to be sourced that can be deployed quickly while capital procurement works on the viability of a • longer-term solution.

- Fuel Supply Management: Most generators are fueled by diesel, natural gas and in able to reach you, or fuel may not be available for many days. How many days fuel supply should you keep in storage on site to run your operation? If your standby generator runs on natural gas, what is the plan if the gas supply is cut off?
- The 2011 Goderich tornado, an F3 tornado, caused significant damage, including the disruption of the natural gas supply to the town due to safety concerns. In severe weather events like this, it is sometimes necessary to shut off natural gas supplies to prevent potential explosions or fires caused by damaged gas lines. Many buildings and businesses were without natural gas for weeks while lines were being repaired and inspected. A comprehensive emergency power program needs to consider an alternate supply of portable power.
- Automatic Transfer Switches (ATS): In cases where you don't have sufficient standby power or you need to pivot due to your regular fuel supply being interrupted, each location should have an ATS with quick connects to enable rapid and seamless emergency hookups of portable generators.
- Electrical Hookups: Each region, province allowed to make them and who has per dollar spent. authority to inspect them prior to applying load. The emergency plan should have a list Infrastructure and Facility Upgrades to make this happen properly and safely in compliance with local regulations.

Portable generators can usually be in place in a couple of hours with the proper emergency planning.

some remote areas, propane. Contingency While renewable energy projects such as wind plans must be considered and incorporated and solar energy harvested by a battery storage in you emergency plan if you are to keep solution will have its day in the future, in my your generator fueled. If it is a region wide opinion we are not quite there yet. Battery emergency, the fuel supplier may not be storage solutions are relatively short term and



and state have their own regulations for expensive when compared to legacy standby temporary electrical hookups, who is generators, when compared to kW's delivered

of local electricians that can be relied upon • Flood-Proofing: Elevate critical electrical equipment above potential flood levels and seal building envelopes against water ingress.

Build earthen berms around the building or tunnels for water to flow with grates over them or permeable asphalt parking lots. There are many solutions, if you plan for them.

- Fireproofing: Use fire-resistant materials for critical infrastructure and create defensible spaces around locations to protect against wildfires.
- Communication Systems
- Emergency Communication Plans: Develop and maintain communication plans to coordinate with local authorities and employees during emergencies. Do you have a plan in place to make sure that everyone who was in the building got out? Plan ahead.
- Redundant Communication Systems: Use satellite phones and other redundant systems to ensure continuous communication.
- Training and Drills
 - Staff Training: Train staff on emergency procedures, generator operation, and safety protocols. Staff training provides a level of comfort to enhance confidence and reduce panic in a stressful situation.
 - Regular Drills: Conduct regular emergency drills to ensure readiness and address any weaknesses in the plan. Frequent drills help staff anticipate the unexpected. Police, fire and paramedics,

the military, all practice and drill endlessly so that when the time comes, the basic skills are so automatic and second nature that you are prepared for the unexpected.

Collaboration and Coordination

- Local Authorities: Collaborate with local emergency services and government agencies for coordinated response efforts. Know where to find out when roads are closed by local police due to heavy snow or roads washed out in a storm.
- Mutual Aid Agreements: Establish mutual aid agreements with other businesses for resource sharing during emergencies. Excess fuel, water pumps, generators, even labour. As they say, what goes around, comes around. It may be your turn tomorrow.
- Monitoring and Maintenance
 - Regular Inspections: Conduct regular inspections and maintenance of backup power systems and emergency equipment. Planned maintenance and regular operation ensure the gen-set will operate as expected, when expected.
 - Monitoring Systems: Implement remote monitoring systems to track the status of power systems and



quickly address issues. Oil, fuel and coolant level sensors are cheaper than ever, often costing less than \$100. Certainly, much cheaper than having to scramble to get a technician on site in an emergency.

Now more than ever, standby power generation adds value to real property.

- Document Plans: Maintain detailed documentation of the emergency power supply plan and update it regularly with current vendor contacts; fuel delivery, electricians, fire & security alarm systems, and so on.
- Post-Emergency Reviews: After each emergency, review the response and update plans based on lessons learned. What worked and what did not. Failures or weaknesses in the plan this time around

can be resolved by discussing alternatives for next time.

•

In an era where the unexpected has become the norm, the importance of proactive preparation cannot be overstated. Climate emergencies—whether they come in the form of tornadoes, floods, or wildfires—demand a robust response plan that safeguards not just the physical infrastructure but also the lives and operations within. The time to act is now.

By assessing critical power needs, securing reliable backup systems, and ensuring seamless communication and coordination, we can face these challenges head-on. Remember, it's not just about surviving the storm but thriving in its aftermath. Plan today, protect tomorrow.

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The Importance of Electrical Distribution System Inspections in Data Centres and Laboratories

Juan Carlos LaGuardia Merchán



In the fast-paced environments of data centres and laboratories, the reliability of electrical distribution systems cannot be overstated. These critical systems are the backbone of operations, ensuring continuous power flow to servers, sensitive laboratory equipment, research and facilities. As facility managers, it is our responsibility to guarantee the efficiency and safety of these systems. One key element in achieving this is regular and thorough inspections, vital in preventing downtime, ensuring compliance, and safeguarding personnel.

Why Electrical Distribution Inspections Matter

Electrical distribution systems in data

centres and laboratories are subject to wear and tear, temperature fluctuations, and environmental conditions that can lead to malfunctions or, worse, complete failures. For a data centre, an unexpected outage could result in the loss of critical business operations, with financial and reputational consequences. For laboratories, the failure of an electrical system could lead to the shutdown of vital equipment, disrupting ongoing research and jeopardising valuable data.

Regular inspections help detect early signs of wear, faulty wiring, overloaded circuits, and other issues that could lead to potential hazards. These inspections not only ensure operational continuity but also contribute to energy efficiency. In many cases, outdated or faulty equipment consumes more power, leading to higher operational costs. By identifying these inefficiencies through inspections, facility managers can implement corrective actions that reduce energy consumption and costs.

ISO Standards and Inspection Guidelines

ISO standards provide a structured approach to maintaining and inspecting electrical distribution systems, ensuring that they meet the necessary safety and performance requirements. Two key ISO standards relevant to facility management in data centres and laboratories are **ISO 50001** and **ISO 45001**.

• **ISO 50001**: This standard focuses on energy management systems and promotes energy efficiency. Regular inspections of electrical distribution systems are part of the overall strategy to ensure energy efficiency and minimise energy waste. It emphasises the importance of optimising electrical systems to reduce energy consumption, which is crucial in both data centres and laboratories, where energy use is high.

• ISO 45001: This standard addresses occupational safety health and management systems. Ensuring that electrical systems are in proper working order reduces the risk of electrical hazards, protecting staff from accidents and injuries. Inspections are vital in maintaining the safety of the workplace, as faulty electrical systems can lead to dangerous conditions, including electrical shocks or fires.



These standards not only provide guidelines for the design and operation of electrical systems but also emphasise the need for regular inspections and maintenance to uphold safety, efficiency, and compliance.

Inspection Frequency and Best Practices

According to best practices, as outlined by ISO 50001 and ISO 45001, the frequency of inspections depends on the complexity of the electrical systems and the critical nature of the equipment they support. However, it is generally recommended that electrical distribution systems in data centres and laboratories be inspected at least once every six months. In high-demand environments, quarterly inspections may be more appropriate to address the increased risk of wear and failure.

During inspections, facility managers should prioritise:

- Visual Inspections: Check for signs of wear, corrosion, or damage to cables, connectors, and other components.
- Thermal Imaging: Identify areas of overheating that may indicate overloaded circuits or faulty

components.

- 3. **Electrical Testing**: Measure the integrity of wiring, breakers, and grounding systems to ensure that all components are functioning correctly.
- 4. **Load Testing**: Evaluate the system's capacity to handle peak loads without failure.

In addition to these tasks, it's crucial to maintain a detailed log of all inspections, findings, and corrective actions. This record serves as evidence of compliance with ISO standards and can help identify patterns of recurring issues.

As facility managers, our role extends beyond routine maintenance. We are the guardians of critical infrastructure, and the decisions we make directly impact the efficiency, safety, and

performance of the systems under our care. Electrical distribution systems, particularly data in centres and laboratories, are the lifeblood of operations. A single fault could result in catastrophic downtime or safety hazards. Regular inspections are not just a recommendation; they are a necessity.

I urge all facility managers to review their current inspection protocols. Are you conducting inspections frequently enough? Are you following ISO guidelines to ensure compliance and best practices?

Now is the time to act. Invest in your electrical distribution system inspections today to prevent costly failures tomorrow. The future of your facility depends on it.

Americans CEMBER drink 360 million glasses of champagne on NYE Lobster & Chicken are **New Years Day** considered Bad Luck **New Years Eve** is January 1 to be eaten on New is December 31 0 Years Eating Black Eyed Peas on Open ΕΨ ΥΕΔ New Years Windows Day is Good & Doors Luck to let out the old In Mt. Olive, North Eat 12 Carolina Grapes at they watch Midnight a 3-foot for Good Throwing a bucket o pickle drop Over 1 Luck water out the Million window will drive The People are away evil spirits **Tournament of** The color of at the ball **Roses Parade** your undies drop in Time has run since could bring you Square 1890. good things that next year MADEWITHHAPPY.COM

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Working at Height—Toolbox Talk Keyur Patel

Working at height means working on any height from which there is a risk of fall. More than 30% of industrial accidents are because of falls from height. Out of which almost 60% of falls resulted in a death. Common causes include falls from ladders, fall from scaffoldings, fall from structure, fall from the fragile roof, etc. majority activities in which risk of fall from height include painting work, roof sheeting work, scaffold erection work, cable laying work, cable dressing work, lighting work, etc.

Hazard of working at Height

- Fall from height
- Fragile roof
- Inadequate Ladder
- Unstable platform
- Overhead electrical power lines
- Overhead cranes
- Tough Weather (high wind flow, rain, extreme heat etc.)
- Slip & trip by tools or material stacking on platform
- Material falls from height
- Inadequate access
- Poor illumination

Control for Working at Height

- Elimination: Avoid work at height if possible
- **Substitute:** Use scissor lifts, Cherrypicker (Boom lifters), scaffolds for working at height instead of working through unsafe access
- Engineering control: Use crawling board,



edge protections, railings etc. as a engineering control

- Administrative control: Provide training related to work at height, Permit system for work at height
- **Personal protective equipment (PPE):** Use safety belt, retractable fall arrester, lifeline for height work

Precaution required before working at Height

- Inspect work site prior to day of work
- Mark or covered fragile surface with appropriate guard rail before assigning work
- Prepared pre job plan for work
- Identify hazard of work and decide appropriate controls for each hazard before starting of work
- Explain each hazard to workmen before starting of job
- All platform or ladder should be inspected as per your plant procedure
- Ensure safety belts are free from any damages, all it's hooks, strips are in healthy conditions

- Identified walkable and non-walkable area if work has been carried out on the roof
- Make sure all non-walkable area must be clearly marked and barricades to restrict workers movement on that area

Ensure following points while Working at Height

- Use engineering controls and do as much as work from ground level
- Work Permit has been required with all due precautions (i.e. PPEs, structure, platform, weather condition, illumination, area surrounding etc.)
- Mobile or static platform should be safe and secure use additional outriggers in mobile scaffolds to improve stability of scaffolds
- Work platforms have adequate capacity for withstanding weight of people, their equipment and materials
- Adequate guardrail, barriers or any other means of protection are required
- A safe intermediate platform is required, where access ladders rise above 9 m
- All Scaffold must be approved by scaffolder or decided authority
- Ladders are rested at the correct angle (maintain 4:1 ration), extend at least 1 m above the stepping-off point and are secured, top and bottom.
- ladders must have valid inspection tag, or it must be approved
- Safety belt required while working at height above 1.8 meter
- Avoid work near to the HT or LT Line
- Ensure appropriate access of egress for emergency
- Make sure all tools or equipment should be properly tied to avoid fall from height

- Provide toe guard or edge protection on roof on platform to secure unwanted material falling from height
- While working near fragile roof provide appropriate anchorage for safety belt anchoring
- Use fall-arrest devices, safety harnesses, lifeline, H-line or safety nets to prevent falls
- Always supply and use anchorage points for safety harnesses and ladders
- Work at height not allowed if weather condition is adverse
- Clean safety shoes before stepping up at heights to avoid slip
- Do not overreach on platforms or ladder



- Do not accumulate rubbish on platform
- Never use forklift for working on height
- Always anchor Safety harness while working at height

Safe Working Practices for Working at Height

- All person engaged in height work are trained and competent
- Conduct medical examination of workers (must be physically and mentally fit for working at height) before working at height more than 50 foot
- Select appropriate equipment and conduct risk assessment for work
- Use crawling boards or ladders on roof if roof is fragile or the slope of roof is above 10 degrees
- Restrict unauthorized access to roofs, chimney, terrace, stacks etc.
- Use ladders for light work of short

duration, when no safer alternative identified

- Inspect & maintain all equipment regularly before use and after adverse conditions
- All opening must be guarded or covered to avoid fall
- Secure your tools with your cloth to avoid slipped or fall during height work
- Ensure area must be barricaded, if any height work activities are carryout
- Use a chute for lower materials from height to safe movement of material during work at height
- Use of mobile is strictly prohibited during work at height as mobile can distract persons cognitive ability which can lead to the accidents so keep mobile out of work

Remember: There is no safe height to fall from, so avoid working at height when possible



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The Importance of Air Conditioning Maintenance in Data Centres: Ensuring Efficiency, Compliance, & Comfort

Juan Carlos LaGuardia Merchán

In today's digital age, data centres are the backbone of businesses across various industries, housing critical IT infrastructure. These centres operate around the clock, managing high volumes of data, with servers generating significant heat.

Consequently, maintaining optimal environmental conditions is crucial to prevent equipment overheating and ensure operational efficiency. Air conditioning systems play a pivotal role in regulating temperature, and the importance of their maintenance cannot be overstated.

We will explore why air conditioning maintenance is essential, the applicable ISO

standards, and the ideal temperature range for ensuring ergonomic and operational efficiency in data centres.

The Role of Air Conditioning in Data Centres

Data centres rely on a robust cooling infrastructure to manage the heat generated bv servers, networking equipment, and storage devices. Without proper cooling, these systems are at risk of overheating, which could lead to malfunctions, reduced lifespan of equipment, and even costly downtime. Air conditioning systems in data centres are designed to provide precise temperature



and humidity control, creating a stable environment that ensures optimal IT infrastructure performance and reliability.

However, like any mechanical system, air conditioning units in data centres are prone to wear and tear over time. Components such as filters, compressors, and evaporators can become clogged or malfunction if not properly maintained. Failure to conduct regular maintenance can result in system inefficiencies, higher energy consumption, and an increased risk of equipment failure. Therefore, implementing a robust maintenance programme for air conditioning systems is essential to mitigate these risks and prolong the lifespan of both cooling equipment and IT infrastructure.

Applicable ISO Standards for Data Centre Cooling Systems

In addition to the technical requirements of maintaining air conditioning systems, adhering to international standards is equally critical. Several ISO standards apply to data centre environments, focusing on maintaining efficiency, safety, and reliability.

Among these, ISO 50001 stands out, as it provides a framework for establishing, managing, and improving energy performance in data centres. This standard helps organisations optimise energy use, thereby reducing costs and environmental impact. Regular maintenance of air conditioning systems is crucial in ensuring compliance with ISO 50001, as poorly maintained systems consume more energy. Another key standard is **ISO 27001**, which focuses information security on standard management. While this is

primarily concerned with data security, the environment in which servers operate is a crucial factor in ensuring system availability and integrity. Effective cooling is vital to prevent overheating, which could lead to data loss or corruption, thus impacting the overall security posture of the data centre.

ISO 9001 is also relevant, as it pertains to management systems. This quality standard emphasises continuous improvement, and regular maintenance of air conditioning systems is a clear example of adhering to this principle. By implementing scheduled maintenance and promptly addressing any issues, facilities managers can demonstrate their commitment to maintaining high-quality operational environments.

Ideal Temperature and Ergonomics in Data Centres

Maintaining the right temperature in a data centre is a delicate balancing act. On the one hand, the temperature must be low enough to ensure that the servers and other IT equipment operate efficiently. On the other hand, the temperature should not be so cold as to cause discomfort for personnel working in the data centre. The industry standard for server rooms is generally between 18°C guidelines and 27°C, according to provided by the American Society of Refrigerating, Air-Heating, and Conditioning Engineers (ASHRAE). However, the ideal temperature range depends on the specific equipment being used and the heat load generated.

A well-maintained air conditioning system

can ensure that the temperature remains within this optimal range, preventing fluctuations that could lead to equipment damage. Additionally, maintaining proper humidity levels—typically between **40% and 60% relative humidity** is critical to prevent static electricity, which could damage sensitive electronic components.

From an ergonomic perspective, the temperature should be comfortable for data centre personnel. Prolonged exposure to low temperatures can lead to discomfort and reduced productivity. Therefore. it's important to strike a balance between the needs of the equipment and the comfort of the individuals working in the environment. Facilities managers should monitor and adjust temperature settings as needed, particularly in areas where staff spend extended periods.

The Importance of Regular Maintenance

Regular maintenance of air conditioning systems in data centres is not just a matter of operational efficiency, it's also a matter of compliance with industry standards and ensuring the safety of both equipment and personnel. By conducting routine inspections, cleaning filters, checking refrigerant levels, and addressing any potential issues before they escalate, facilities managers can significantly reduce the risk of system failures.

Moreover, proper maintenance leads to energy savings. Well-maintained systems operate more efficiently, consuming less power and reducing the overall energy footprint of the data centre. This is particularly important given the rising energy demands of modern data centres and the need to meet sustainability targets.

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How to solve the Kenken puzzle:

(Answers on page 28)

- Fill in the numbers from 1–6
- Do not repeat the number in any row or column
- The numbers in each heavily outlined set of squares, called cages, must combine (in any order) to produce the target number in the top corner using the mathematical operation indicated
- Cages with just one square should be filled in with the target number in the top corner
- A number can be repeated within a cage as long as it in the same or column

	5	9	3	8				
1		8			4	9		2
			7			3		5
6		1		4	8			9
				9		7	6	
	4	3	2				5	1
	8	6		3		5		7
5		4		6	7		2	3
			9			6		



Donating takes less than 1 hour:

20 minutes for registration 10 minutes for donating 15 minutes for a snack

One pint of blood is collected during a donation. It takes the body about **48 hours to replace the volume of blood lost**.

Each blood donation can **Save the lives Save the lives Save the lives Save the lives**

Eye Protection

Eye Protection

Eye protection: Eyes are precious and valuable organs that enable us to see the world around us. However, they are also incredibly fragile and susceptible to injury. Every year, millions of people worldwide suffer from eye injuries, many of which could have been prevented through proper safety measures. In this article, we will explore the importance of eye safety, the hazards that can cause eye injuries, the statistics of workplace accidents involving the eyes, small incident stories, and the best practices for preventing eye injuries.

Why is Eye Safety Important?

The human eye is a complex and delicate organ that plays a vital role in our everyday lives. Our vision allows us to see, navigate our environment, and perform various tasks with precision and accuracy. Losing vision can severely impact a person's quality of life, leading to а loss of independence, decreased mobility, decreased and productivity.

Eye injuries can occur in a variety of settings, including at home, at work, during sports, and even during recreational activities. The effects of an eye injury can range from minor discomfort to permanent vision loss



or blindness. Therefore, it is crucial to take steps to protect our eyes and prevent injuries from occurring.

Workplace Eye Injuries: The Statistics

Eye injuries are a common occurrence in the workplace, with the National Institute for Occupational Safety and Health (NIOSH) reporting that over 2,000 U.S. workers sustain job-related eye injuries each day. That's over 700,000 eye injuries per year! Additionally, according to the Occupational Safety and Health Administration (OSHA), workplace eye injuries cost an estimated \$300 million a year in medical expenses, workers' compensation, and lost productivity.

Incidents related to eyes

A construction worker, Tom, was working at a construction site where debris and dust particles were everywhere. While using a jackhammer, a piece of debris flew into his

eye, causing severe damage. He had to take several days off work and underwent surgery to remove the debris from his eye. Although he recovered, he lost 50% vision. Tom learned a valuable lesson about the importance of wearing proper eye protection while working in hazardous conditions.

Another incident was with a chemist, Maria, who was handling chemicals in the laboratory. While transferring a chemical from one container to another, a drop of the chemical splashed into her eye, causing severe pain and irritation. She was rushed to the hospital, where she received treatment to prevent further damage to her eye. Fortunately, Maria did not experience any long-term vision loss, but the incident left her shaken and aware of the importance of proper safety measures.

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Eye injuries can occur in a variety of settings, including at home, at work, during sports, and even during recreational activities. The effects of an eye injury can range from minor discomfort to permanent vision loss or blindness. Therefore, it is crucial to take steps to protect our eyes and prevent injuries from occurring.

Workplace Eye Injuries: The Statistics

Eye injuries are a common occurrence in the workplace, with the National Institute for Occupational Safety and Health (NIOSH) reporting that over 2,000 U.S. workers sustain job-related eye injuries each day. That's over 700,000 eye injuries per year! Additionally, according to the Occupational Safety and Health Administration (OSHA), workplace eye injuries cost an estimated \$300 million a year in medical expenses, workers' compensation, and lost productivity.

Incidents related to eyes

A construction worker, Tom, was working at a construction site where debris and dust

particles were everywhere. While using a • jackhammer, a piece of debris flew into his eye, causing severe damage. He had to take several days off work and underwent surgery to remove the debris from his eye. Although • he recovered, he lost 50% vision. Tom learned a valuable lesson about the importance of wearing proper eye protection while working in hazardous conditions.

Another incident was with a chemist, Maria, who was handling chemicals in the laboratory. While transferring a chemical from one container to another, a drop of the chemical splashed into her eye, causing severe pain and irritation. She was rushed to the hospital, where she received treatment to prevent further damage to her eye. Fortunately, Maria did not experience any long-term vision loss, but the incident left her shaken and aware of the importance of proper safety measures.

Hazards and Controls for Eye protection

Many industries pose significant risks for eye injuries due to the hazards present in their work environments.

The following are some of the most common hazards and controls that can help prevent eye injuries:

Hazards related to eye injuries

 Chemicals: Workers in industries that deal with chemicals such as laboratories, manufacturing, and cleaning services are at risk of chemical splashes or spills that can cause severe eye injuries.

- Dust and Debris: Workers in industries such as construction, mining, and woodworking are at risk of eye injuries from flying debris or dust particles.
- Radiation: Welders and workers in industries that involve ultraviolet (UV) radiation or lasers are at risk of eye injuries from the intense light emitted by these sources.
- Mechanical Hazards: Workers in industries that use machinery, such as drilling, cutting, grinding, nailing, and lathe operations are at risk of eye injuries from moving parts or flying objects.
- Thermal Hazards: Workers in industries that deal with extreme heat, such as foundries, ceramics, or glass manufacturing, are at risk of eye injuries from heat and molten metal splashes.
- Biological Hazards: Workers in industries that handle biological material, such as medical or laboratory are at risk of eye injuries from exposure to infectious material.
- Electrical arcs and sparks: Workers involved in electrical operations are at risk of eye injuries by arc flash or electrical



sparks

- Swinging objects: Swinging objects like ropes and chains can cause eye injuries upon impact with the eye. These injuries can range from minor scratches or cuts to more severe damage such as corneal abrasions or even permanent blindness
- Compressed air: Particles can injure eyes while using compressed air to blow dirt, swarf, or dust

Common Controls to avoid eye injuries

- Proper personal protective equipment (PPE), including goggles or full-face shields, must be worn to prevent these types of injuries
- Welding helmets or specialized goggles should be worn to protect the eyes from UV and infrared radiation
- Workers should also receive training on how to identify and mitigate the risks associated with their specific work environment
- Employers should also conduct regular safety audits to ensure that the appropriate safety measures are in place and being followed



- Keeping work areas clean and organized can help prevent eye injuries caused by tripping hazards or falling objects
- Contact lenses should not be used in areas with dust and/or chemicals.
- Ensure all eyes wear is in a good condition by daily inspection: Replace eyewear that has lenses too pitted, scratched, etc.
- Always use anti-fogging type eyewear
- If eyewear has been contaminated by a hazardous chemical or is going to be worn by another person, it should be disinfected
- To protect clean eyewear from dust, moisture, or damage, it should be stored in a closed container
- Clean eyewear after every use

Eye injuries can happen at any time and in any place, whether it be at home, at work, or while participating in outdoor activities. In the event of an eye injury, it is essential to act quickly to prevent further damage and minimize the risk of permanent eye damage or blindness.

Emergency Measures for Eye Injuries: Chemical Splash:

- If a hazardous chemical comes into contact with your eye, immediate action is required.
- The first step is to flush the eye with clean water for at least 15 minutes.

- It is essential to hold the eye open and flush the water directly into the eye to ensure the chemical is thoroughly washed out.
- If an emergency eyewash station is available, use it immediately. After flushing, seek medical attention from a doctor or emergency room as soon as possible.

Foreign Particle or Debris:

- If a foreign particle or debris enters your eye, try to blink it out. If this does not work, do not attempt to rub the eye, as this can cause further damage.
- Cover the affected eye and seek medical attention immediately. An eye doctor will be able to examine the eye and remove any particles or debris safely.

Blunt Force Trauma:

- If the eye is struck by a blunt object, seek medical attention immediately.
- This can include anything from a sports injury to an accident in the workplace. Even if the eye appears to be okay, it is essential to have it examined by a doctor to ensure that there is no internal damage or swelling that could cause longterm damage.

Penetrating Injuries:

- If an object penetrates the eye, do not attempt to remove it. Instead, cover the affected eye and seek immediate medical attention.
- A penetrating injury can cause severe damage to the eye and surrounding

tissues, and removal of the object can cause further damage.

Prevention:

The best way to prevent eye injuries is to take proper precautions and wear appropriate protective eyewear. In industries such as construction or manufacturing, safety glasses or goggles should be always worn to prevent foreign particles or debris from entering the eye. Similarly, protective eyewear should be worn during recreational activities such as sports, biking, or swimming.

Conclusion:

Eye injuries can be painful, debilitating, and in some cases, lead to permanent vision loss. Acting quickly and seeking immediate medical attention in the event of an eye injury is essential to prevent further damage and ensure the best possible outcome. By taking the necessary precautions and wearing appropriate protective eyewear, individuals can minimize the risk of eye injuries and maintain healthy vision for years to come.

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- Title:Let the Canary Sing in Your Building
Cost -Effective Solutions for Tackling Indoor
Air Pollution From Parkade to Penthouse
- Presenters: Kae Shummoogum, Gasonic Group Founder & CEO
- Location: Danish Canadian Club, 727 11 Ave SW, Calgary, AB T2R 0E3

Bio: Kae Shummoogum with Gasonic Group has recently completed his research paper titled 'Exhaust Gas Sensor Performance Research for Healthier & Safer Parkades.'

Kae has generously agreed to share his research findings with us and update us on his recommendations for implementing specific strategies can lead to healthier air throughout the building while reducing energy and maintenance costs.

Kae has been a frequent contributor to our monthly meeting educational talks and is a go-to subject expert with his 38 years of expertise being at the forefront of hazardous gas detection and indoor air quality monitoring in Calgary.

There will be a draw to win a Fresh Air Electronic Canary for one fortunate person in attendance at the January 14th Building Operators Association Meeting 5:00 PM Upstairs at the Danish Canadian Club.



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We look forward to seeing you <u>in-person</u> for our meeting at the Danish Canadian Club (727 11 Ave SW) on <u>Tuesday January 14,</u> <u>2025 @ 5pm</u>

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