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RISK CONSIDERATIONS FOR

Electric Vehicle Charging Station Installations

By Kyle Stewart

As consumers begin to shift away from fossil fuels and seek alternate energy sources for transportation needs, sales of plug-in electric vehicles (PEV) are surging. Little thought is given to finding locations to refuel a fossil fuel vehicle; however, the availability of electric vehicle supply equipment (EVSE) to charge a PEV may be sporadic dependent on your locality. Initially, EVSE charging stations were typically located at fueling establishments; however, many organizations are opting to install EVSE charging stations as a convenience to employees who may own a PEV. If your organization is considering the installation of an EVSE station, your potential risks as an EVSE charging station operator should be considered during the design phase prior to installation.

RISKS

Due to the novelty of the PEV industry and the absence of uniform regulations pertinent to EVSE charging stations, the installation of EVSE charging stations does present risk and exposure because of minimal data available due to limited incidents reported. As a policyholder who elects to install an EVSE charging station, you may be liable for incidents attributed to the use, malfunction and

injuries sustained by individuals using an EVSE charging station installed on your grounds. Consideration should be given to the following risks and preventative measures implemented to ensure EVSE charging stations are inspected regularly to reduce risk of injuries, property damage and potential litigation.

Business Interruptions – Power outage caused by EVSE charging station.

When an individual elects to charge their PEV it can contribute to an increased risk of power outages and expense due to the demand on the electric grid.

- The possibility of a power outage(s) may result with increased demand as EVSE charging stations are used differently based on the need/convenience of drivers. Drivers may elect to charge their PEV at night after work hours, charge during the workday or enroute to their destination.
 - Use of EVSE charging stations during peak demand (i.e., day) and at night may prevent electrical system components from cooling and result in a blown transformer fuse due to overheating.

– If the EVSE charging station is not independent of your organization's electric system, a power outage could lead to business interruptions if a complete or partial shutdown is required.

- The type of charger may also contribute to power outage(s) due to the demand of increased electricity supply.

– There are three main types of EVSE charging stations, two operate on alternating current (AC) and the third charges a PEV using direct current (DC).

- AC Level 1 and AC Level 2 use the PEV's built-in charger to charge the battery.
- A DC Fast Charger (DCFC) is located within the EVSE charging station. The DCFC requires additional load on your electrical service.

Risk of Fire

- Although rare, lithium-ion batteries may combust when damaged, overcharged, subjected to high temperatures or if an electrical short occurs. When fires do occur within a PEV with lithium-ion batteries, these fires burn hot, fast and require substantial quantities of water to extinguish.
- "Thermal Runaway" may occur in lithium-ion batteries; thermal runaway is caused by a malfunction to a cell from excessive heat, mechanical failure or short circuiting. This causes the surrounding cells to become damaged and add additional "fuel" to the fire.
- Do local emergency services (i.e., fire department) have the capability and resources to respond and extinguish a lithium-ion battery fire?
 - Lithium-ion battery fires are prone to reigniting and can release toxic gases.
 - Emergency responders may not be aware of the specific type of battery used in the PEV, have limited experience responding to a PEV fire or the resource(s) to allocate for extended periods often required to fully extinguish a PEV fire.

Installation Considerations

- Was the EVSE charging station installed by a licensed electrician?
- Does the licensed electrician have prior experience installing EVSE charging stations?

– Consider requiring the EVSE charging station installer to possess additional certifications in electric vehicle safety or electrical vehicle charging safety through consensus regulatory agencies (i.e., NFPA, UL) and equipment manufacturers.

- Is the main disconnect switch to isolate power to the EVSE charging station easily identifiable and accessible?

– In addition to in-house facilities staff, staff who work after business hours should be familiar with the location and procedures to isolate power to EVSE charging station(s), if required.

– Have local emergency response agencies been provided an opportunity to become familiar with the EVSE charging station and methods to extinguish a PEV fire. Is the EVSE charging station main disconnect switch accessible by local emergency response agencies or can it be accessed through a Knox box?

- Is Ground Fault Circuit Interrupter (GFCI) protection provided?

– Are GFCI breakers incorporated into the EVSE charging station tested frequently? GFCI failure may occur from weather elements (i.e., lightning, high humidity).

- Is your existing electric service able to support an EVSE charging station? Will upgrades be required or will the installation of a new transformer, utility distribution line and/or electrical panel be required?

- Installation Location of EVSE Charging Station

– PEVs may be unattended for extended periods during the charging cycle. Is the EVSE charging station installed in a location adequately illuminated to reduce theft from the vehicle or EVSE components (i.e., copper, silver).

– Is the EVSE charging station installed in a location that is accessible to emergency response vehicle(s) and near a fire hydrant?

– Will the EVSE charging station be installed near other structures (i.e., canopies, buildings) that could be damaged should a PEV fire occur at the charging station?



BEST PRACTICES/ACTIONABLE ITEMS

Below are best practices your organization can employ to reduce exposure with the installation of an EVSE charging station:

- **Fire/Emergency Response**

- Create a relationship with and inform local emergency services of the presence of an EVSE charging station and the location of the main electrical disconnect.

- Implement a plan to respond to fires associated with lithium-ion batteries and/or thermal runaway.
- Provide an opportunity for local emergency responders to train on potential scenarios involving EVSE charging station fires.

- **Insurance Policy Coverage(s)/Exclusion(s)**

- Consult your licensed insurance producer representative for coverage(s)/exclusion(s) under your liability insurance policy and/or whether additional insurance coverage should be obtained.

- Evaluate whether the EVSE manufacturer's warranty extends to damages caused by the end-user/vehicle should improper charging ports/cables be used to charge a PEV.

- **Use Agreement**

- Determine who will be permitted to use the EVSE charging station; varying protocols may be applicable dependent on whether the EVSE charging station is open for public use versus reserved for employees only.

- It is recommended your legal counsel be consulted for applicable laws, regulations, taxes (i.e., sales, general, supplier) that may have to be collected.

- Consult with your legal counsel to discuss use agreements in the event the user defaults on payment for charging services.

- **Have a licensed electrician with prior experience and knowledge of EVSE charging station installation complete all work.**

- Select installers who possess certifications in EVSE charging safety through the equipment manufacturer.

- **Develop an Inspection/Maintenance Program**

- Maintain documentation of inspection(s) and testing performed on the EVSE charging station to keep the component(s)/device(s) in proper working order.

- Recordkeeping should include the credentials/certifications of any individual who conducts maintenance or repairs to the EVSE charging station; obtain copies of each contractor's certificate of insurance (C.O.I.'s).

- **Does the EVSE charging station(s) present cybersecurity risk(s) to your information technology system?**

- Like "skimmer" devices placed on fuel and gasoline pumps, is the EVSE charging station inspected regularly and protected against skimming devices to defraud the end-user and operator?

- Mitigate this risk by installing surveillance systems, providing adequate lighting and have security personnel patrol locations where EVSE charging stations are installed.

- **If the EVSE charging station is connected to your information technology system to process payments or monitor the EVSE charging station system, consult your information technology staff to explore cyber vulnerabilities and who will be responsible to update the EVSE charging station operating system software (where applicable).**

As popularity grows, requiring additional access to EVSE charging stations and based on PEVs being a relatively new concept with limited data on risk, steps to reduce exposure and potential liability are crucial through the design phase prior to the installation of a EVSE charging station. Risk mitigation strategies should be explored through each phase including the design, suitable location(s), installation, preventative maintenance/inspection program and response to a PEV fire by emergency response agencies to decrease risk of injuries, property damage and potential litigation.



Have more risk questions?

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cmregent.com/risk-control/ask/

Sources: National Fire Protection Association (NFPA): Best Practices for Emergency Response to Incidents Involving Electric Vehicles Battery Hazards. U.S. Department of Energy: Alternative Fuels Data Center

Swing Set CONNECTIONS

By Derek Neubauer

When connecting swing seats to swing chains or swing chains to swing structures, there is one piece of hardware that is most popular, the S-hook. Previously these were the only option for swing set connections, but recently more options have become available. Below I will describe the most popular options so an appropriate choice can be made by your institution for swing set connections.

S-HOOK

The S-hook has been the standard for years for swing set connections. It normally has been made of durable material that can handle the beating a school playground swing set goes through. They are relatively cheap per unit which should mean low hassle replacement. However, S-hooks do have safety concerns that are not always met regarding maintenance. The Consumer Product Safety Commission (CPSC) Guidelines for Public Playground Safety requires that S-hooks are closed to within 0.04 inches (about the thickness of a dime). Closing an S-hook properly requires a specific tool. Also, the area of the S-hook where attachment is made can wear very quickly and be hidden by the connection itself. If preventative maintenance is not thorough when looking at the connection there can be substantial wear leading to failure of the S-hook.



U-BOLT/CLEVIS

Gaining popularity in recent years, the U-bolt or clevis swing set attachment offers easier installation, normally by way of an Allen wrench or simple nut/bolt connection, which is less labor intensive for the staff. Newer models now come with a special Hex-Tool, specifically designed to attach this type of equipment and usually comes with purchase. Due to its design, there are no openings that can get tangled in students' clothing. These connections can cost significantly more per unit and have the same issue where the wear can be obstructed by the actual connection.



PENDULUM

The newest connection on the market, the pendulum can be very durable. They have many of the same advantages/price as the clevis, can also be manufactured in combination with a clevis component, are usually fitted with a bronze bushing that allows for a longer life and provides a good barometer for wear and tear. A swing set would normally have to be fitted with this type of connection from the first installation and if not, other equipment may be required to have it work for an existing swing set.



As with any equipment or hardware, maintenance is critical to preventing injuries. When it comes to swing set connections, a visual inspection needs to be very thorough. The person given this task must move the equipment around to see the level of wear of the connections and be able to access the top connections to inspect as well. Choosing the best connection can save time and money, but safety on a playground should always be paramount.

BLOG

Learn more about playground safety at cmregent.com/blog/.

PORTABLE CIRCULAR SAW SAFETY

By Mark Nease

A portable circular saw is a popular power tool found tucked away in the tool cabinet of many school districts' maintenance shops. Because this type of saw is sold to everyday homeowners, staff may take it upon themselves to use this tool without giving an extra thought to its hazards. Without incorporating best practices, school staff can expose themselves to many risks of injury through the use of portable circular saws.



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Risks/Best Practices

Improper selection, assembly and use of a portable circular saw can lead to a serious injury. Risks and best practices to consider include:

- **A left-handed operator using a right-handed circular saw.** A best practice is to have available a circular saw based on the expected users' dominant hands. Portable circular saws come in both left-handed and right-handed models.
- **Use of the saw without the guards assembled.** Be sure to assemble all guards and check their operation, per the manufacturer of the saw. These include the work rest and the rotating blade guard.
- **Use of a saw with a less functional electric brake.** A properly working electric brake will quickly stop the rotating blade once the operator lets go of the saw's trigger.
- **Making a cut in an unsupported workpiece.** During the cut, especially on plywood, the two sections of wood could "cave" downward, pinching the saw's blade and making the saw unstable, including the possibility of kicking back towards the operator. Controls include either the proper placement and support of the wood so that when cut, the two sections of wood stay separated, or the proper use of wedges inserted between the two sections of wood so that the two sections cannot simultaneously "cave" downward and pinch the saw blade.
- **Installing the blade backwards or installing the wrong blade for the material to cut.** Make sure all staff are trained on proper blade selection and installation.
- **Working on the saw, such as changing the blade, when the electrical cord is connected to power (or the battery on a cordless saw is installed).** Always disconnect power to the saw to prevent an inadvertent start-up of the saw.
- **Using only one hand to maintain grasp of the circular saw.** Portable circular saws have two (2) handles, the main handle where the power switch is located and the front handle. Always maintain contact with both handles so you can keep control of the saw.
- **Pushing the saw on an angle instead of straight into the wood.** Pushing the saw on an angle will cause the blade to pinch, and possibly break its teeth or kick the saw back toward the operator.
- **Pulling the saw toward you to finish a cut.** This is dangerous! Never pull the circular saw.
- **Retracting the blade guard to initiate the cut.** The blade guard on a circular saw is designed to rotate away from the rear of the blade (the part of the saw blade facing the operator). This is so an operator can perform a "plunge cut" that starts and ends in the middle of the wood. Never rotate the blade guard to begin the cut. Avoid performing plunge cuts with handheld circular saws, since this is a dangerous cut technique. Only use a plunge saw for tasks involving plunge cuts.
- **Using of the circular saw with the work rest adjusted to where the bottom of the blade extends deeper than 1/8" – 1/4" past the bottom of the wood.** When the blade is set too deep, the saw is more likely to bind and kick back into the operator. Prior to operation of the saw and with the saw's power disconnected, the operator should measure and adjust the work rest of the saw so that the bottom of the saw blade extends no deeper than 1/8" – 1/4" past the bottom of the wood that will be cut.
- **Using a corded saw in the rain or in wet conditions.** Operators should use good judgment on when and where to operate a portable circular saw.
- **An untrained operator of a portable circular saw is an unsafe operator of a portable circular saw.** All operators should receive training on the circular saw. The operators' manual should be kept with the saw. Users should review the operators' manual before each use and ask questions to supervisors. Do not use the saw without sufficient knowledge of its operation.

Portable circular saws are widely used, but their use doesn't come without safety risks. Take time today to consider various risks and best practices of portable circular saws so you can safely complete your next woodworking project.



Eye Strain Prevention, Lighting and Your Workspace

By Edgar Boord

Your eyes are undoubtedly one of your body's most vital organs, and it goes without saying that they are worth protecting. When you think of eye protection, safety glasses/goggles or even a face shield might be what comes to mind to protect from flying dust/debris or splash from a chemical. Prevention of an immediate physical injury is important; however, repeated exposure will allow for ongoing eye strain symptoms and discomfort that can affect an individual's life on a daily basis. That is especially true for those who spend much of their workday staring at a computer screen, or even driving. In this article, we will take a look at the various eye strain risks, causes and how to prevent these issues from occurring at your workstation or work area.

Risks

- Eye strain can cause physical and mental fatigue, blurred vision, light sensitivity, dry/itchy eyes and headaches. Though these symptoms are short-term and treatable, they can lead to other safety issues. That may include slips/trips/falls or another injury caused by fatigue, lack of awareness or blurred vision.
- Dry, itchy and sore/tired eyes often lead to constant rubbing. This, in turn, can lead to a cornea abrasion and other issues, especially if your hands are dirty or have contacted a chemical.
- Daily screen time without ample breaks can lead to other issues such as increased stress, irritability and reduced mental clarity that can result in a lack of productivity.
- Glare on computer screens from windows or other lighting sources greatly increases eye strain.
- Lighting that is too bright or too dim increases stress on your eyes as they are constantly trying to adjust and maintain focus.
- If your eyes become dry and itchy, avoid scratching or rubbing them with your hands. Instead, splashing your face with (clean) cold water can help provide relief and avoid scratches or foreign bodies from entering the eyes.
- Set up your workstation to avoid glare from lighting sources or windows. Screen glare can greatly increase the stress on your eyes from squinting.
- Overhead/area lighting should always be diffused, generally by an installed light diffuser. This can help reduce glare and an overabundance of light that can be strenuous on the eyes.
- Use local lighting for specific tasks at your desk to allow enough visibility; however, make certain it is not so bright that it increases the stress on your eyes.
- Use natural lighting from windows whenever possible, so long as it does not create glare on a computer screen or is directly facing an employee at their workstation.

Best Practices/Actionable Items

- Take breaks! For every hour of screen time, a break lasting at least five minutes can help with visual and mental fatigue.
- The 20-20-20 rule is another method utilized by individuals working at a computer for extended periods of time. After 20 minutes of screen use, focus on an object approximately 20 feet away for 20 seconds. This allows your eyes to readjust and get some relief.
- While taking a break, it is important to stand up, stretch out and walk around for a bit to reduce neck and back pain issues relating to static sitting positions.
- Be sure to have your eyes checked on a routine basis. Improper prescription eyewear, or lack of it, can also increase the amount of stress on your eyes while trying to focus.

In summary, your eyes are incredibly vital to your daily life. Excessive time on the computer, a phone, or working in improperly lit conditions can have a big impact on not only your eyes, but also your mental and physical wellness. Assuring your eyes remain healthy and working properly can greatly increase your general wellness, mood, productivity at work, and keep you safe from potential incidents stemming from eye strain issues. Preventing those issues can start with a work area assessment and making the necessary changes.

BLOG

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Auditorium Curtain Safety Inspections

by Jake Ruziecki

Stage curtains can provide an appealing look for auditoriums and work wonderfully at hiding unsightly rigging hardware and light fixtures. Whether the stage is set for a rock band with pyrotechnics, a kindergarten graduation or a theatre adaptation of the movie "Shrek," these curtains often take quite a bit of abuse. Through years of usage and wear, the flame resistance capabilities of your stage curtains may have also deteriorated. On average, most flame retardant treatments only last one to five years, according to the manufacturer.

Risks

When manufactured, auditorium curtains are required to meet specific flame-resistant ratings. These ratings can easily be found on inspection tags or manufacturer tags attached to the curtains, and may be classified as:

- **Non-Flame Retardant (NFR)**, meaning the fabric is not flame retardant.
- **Flame Retardant (FR)**, meaning the fabric has been treated with a flame-retardant chemical that may be effective for a year or longer.
- **Durably Flame Retardant (DFT)**, meaning the fabric is treated with non-water soluble flame retardant which will hold up to frequent washing.
- **Inherently Flame Retardant (IFR)**, meaning the fabric is constructed of non-combustible elements, and is permanently flame resistant for the life of the fabric.

Regardless of the curtain's rating, curtains may still be susceptible to fire caused by heat from the light fixtures, dust accumulation or improper cleaning.

Best Practices/Actionable Items

To reduce the risk of fire in your auditorium, these recommended guidelines should be followed:

- **Annually Inspect** the auditorium curtains for damage, dust accumulations and other potential nearby hazards or ignition sources. As mentioned previously, dust is combustible; these dust accumulations combined with the intense heat from auditorium lighting and potentially damaged curtains, could create a recipe for disaster. Ensure that these annual inspections have also been documented for recordkeeping purposes.

- **Maintain Flame Resistance** by verifying during annual inspections that the manufacturer tags or inspection tags indicate what flame-resistant rating is provided for each curtain, and how long this rating is effective. Although all curtains should be inspected annually regardless of rating, most chemical treatments may only be effective for one to five years. During this time frame, a qualified vendor should be contacted to perform an inspection in accordance with *NFPA 701 Standard Methods of Fire Tests for Flame Propagation of Textiles and Films*. Upon completion, it may be recommended depending on the age of the curtains to retreat or replace curtains.
- **Fire Safety Curtains**, where provided, release from the ceiling to provide a barrier between the stage and auditorium seating, allowing individuals more time to evacuate in the event of a fire. The American National Standards Institute (ANSI E1.22.2016) has established requirements for fire safety curtains which indicate that the emergency release must be tested no less frequently than every three months, and that documentation of these tests should be recorded for recordkeeping purposes.

Establishing formal and routine inspection and maintenance plans will not only provide the proper documentation required by NFPA or ANSI, but they will also reduce the risk of fire in your auditoriums, keeping staff, students and the community safer. For further assistance or evaluation of your specific auditorium equipment, you can contact our Risk Control Department at CM Regent Insurance Company.



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