SUMMER 2023

RISK manager

INSIDE...

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LESS=MORE (RISK)

Less Occupied Areas with High Associated Risk

By Edgar Boord

When considering which workplace areas have the most incident potential, high foot traffic areas come to mind because of the high individual-to-hazard ratio. This is likely true in many cases; however, what about areas with a high hazard-to-individual ratio?

Areas of the workplace that have less foot traffic and occupancy often contain some of the more notable risks. This may be due to the equipment, processes and hazardous materials that might exist in these areas and lead to greater hazard potential. A few examples of these areas may be boiler and mechanical rooms, main electrical rooms, chemical storage areas, material storage areas, as well as maintenance/equipment garages or other buildings separate from the main educational buildings. Not only should you include these areas in your routine safety inspections/hazard assessments, but you should look at them through a slightly different lens.

Less foot traffic means fewer individuals to identify potential issues. In addition, there is likely a reason why an area is restricted only to authorized individuals. That reason could be the hazards associated with equipment, layout, walking/working surfaces and processes that require safe operating procedures to reduce incident potential. Here are some of the risks associated with less occupied/trafficked areas:

Risks

- A lack of attention to maintenance/upkeep (i.e., accumulating debris, leaking equipment or frozen pipes in cold weather).
- Housekeeping issues leading to clutter and disorganization.
- Unidentified hazardous conditions.
- Equipment, chemical and other material storage issues (i.e., improper storage practices or falling materials).
- Areas that may not be included in safety committee hazard assessments/inspections.
- Low-lighting conditions outdoors or uneven walking/working surfaces at the lower levels of a building.
- Areas not included in vital safety and security plans such as emergency exit routes, preventative maintenance plans, lockdown procedures, etc.

Best Practices/Actionable Items

- Identification – Your staff should assess the entirety of your buildings and grounds to identify lesser trafficked/occupied areas. Once identified, these areas should be added to routine safety committee hazard assessments.
- Train those who are responsible for the identified less trafficked areas on inspecting for hazards and scheduling preventative maintenance of the areas.
- Include the identified areas in housekeeping programs to reduce clutter so a slip/trip or fall accident can be averted.
- Assess hazard potential relating to processes, equipment and other factors (i.e., chemical storage) specifically to identify best management practices and physical controls that can further reduce associated risks.
- Train affected employees on safe protocols regarding the equipment and processes.
- Assess lighting and walking/working surfaces to implement controls that reduce the risk of an accident.
- Add these areas to the safety and security plans so the occupants of the building with training are prepared for situations such as an emergency evacuation or school lockdown.

Hazard potential can still exist regardless of how infrequently people may work in or walk through an area of the workplace. It is the unsuspecting nature of these hazards that can increase the associated risks as individuals may become lackadaisical about safety awareness. In many cases, the level of risk can be much greater as hazardous processes and equipment are often contained to those areas. For these reasons, it is important to include lesser trafficked/occupied areas into your school's safety/security plans and to assess hazards on a routine basis.

Have a safety question?
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Electrical Preventative MAINTENANCE

By Jake Ruziecki

As electrical and mechanical infrastructure throughout the country continues to age, electrical equipment failure is inevitable and deterioration is normal. Educational facilities are certainly no exception to unavoidable equipment breakdowns. So how does one plan for failure? Wouldn't it be convenient if we could plan these failures for the summertime when building systems are less critical to continued operations? Ideally, the summer break would be the perfect time to evaluate your electrical systems and equipment and perform regular maintenance.

Risks:

If electrical equipment fails during the academic year, it could significantly affect your school's operations, creating further disruptions both internally and externally—not to mention the increased risk of electrical fire damage to facilities and danger to employees. Some equipment at risk of failure that should be considered in an electrical equipment maintenance program include:

- Substations and switchgear.
- Panelboards and switchboards.
- Circuit breakers.
- Grounding and bonding.
- Ground-Fault Circuit-Interrupters (GFCI).
- Lighting.
- Wiring devices such as receptacles, plugs and power cords.
- Other operational specific electrical systems such as pool installations, electrical vehicle (EV) power transfer systems, solar or wind power generation systems, emergency power generators, and battery charging or storage systems.

Best Practices/Actionable Items:

It is important to identify what maintenance approach best suits your organization's electrical maintenance needs. An effective maintenance plan includes different maintenance strategies for each type of equipment. These various maintenance strategies may be reactive, preventative or predictive.

Reactive maintenance is considered a "run-to-failure" strategy, which may be effective for some non-critical electrical equipment that poses no danger to life or property, and for which replacement parts are easily obtainable. It is important to note that this approach could prove costly when applied to more critical electrical systems.

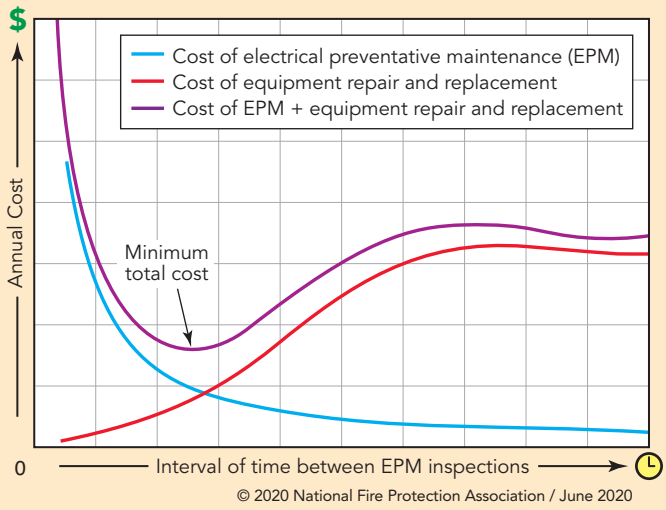
Preventative maintenance is exactly that, a reliability-centered, scheduled approach applied to the servicing of electrical equipment. This approach helps align organizational maintenance plans with maintenance interval requirements set by manufacturers and local regulating agencies.

Predictive maintenance is designed to identify potential electrical issues before failure can occur by periodically evaluating and servicing the electrical equipment and systems. For this approach to be effective, a strong focus needs to be made on monitoring operating conditions, physical conditions of equipment, and identifying leading indicators that may result in equipment failure.

Based on these maintenance strategies, several considerations for an effective electrical preventative maintenance plan should include:

- **Visual Inspection** – Over time, insulation, conductors, cables and other electrical support systems can break down, corrode or become physically damaged. This deterioration can lead to arcing or overheating, which may result in electrical fire. Visual inspections can often help identify these conditions and a need for equipment servicing.
- **Housekeeping** – Critical electrical systems and equipment are often tucked out of sight in isolated areas such as electrical rooms or basements. These areas may not make it to the top of the list for regular building cleanings, which can lead to a buildup of dirt, debris or other foreign material that could cause further deterioration if they were to become embedded in electrical equipment or obstruct ventilation openings. In addition, these areas are generally considered prone to undetected water intrusion, which can lead to equipment failure. It is important to perform frequent visual inspections and cleanings of these areas for three reasons:
  - To ensure housekeeping is adequate.
  - To ensure all electrical equipment has the required clearances from combustible materials.
  - To ensure any physical damage is identified and then reported for remediation.

- **Infrared Inspection** – Infrared inspections can help detect electrical issues and reduce the likelihood of unplanned outages. These inspections use infrared thermography to identify excess heat caused by loose connections, damaged or defective switches and breakers, or overloaded circuits. These inspections are recommended to be completed on an annual basis by the National Fire Protection Association (NFPA 70).
- **Regularly Scheduled Servicing and Recordkeeping** – Create a checklist of electrical equipment that should be inspected and serviced throughout each location. These checklists may include tracking equipment runtime, verifying proper function of equipment, identifying equipment damage, and noting potential signs of overheating. Ensure all records are kept on file for future reference. These records should include infrared inspections, documented repairs and visual inspections.



An electrical maintenance program that includes regular maintenance and inspection is proven to cost less than planning for replacement alone. An effective electrical maintenance program is also one that utilizes reactive, predictive and preventative strategies, meets all applicable regulations, and aligns with your organization's budget. For further assistance or evaluation of your existing Electrical Equipment Maintenance plans, you can contact our Risk Control Department at CM Regent Insurance Company.

MAINTAIN ACCESS TO UTILITY CONTROLS

By Derek Neubauer

BLOG

Learn more about employee safety at **cmregent.com/blog/**.

Have you ever had a faulty faucet in your house that caused water to billow out onto the floor? Or a toilet that wouldn't stop running? All you needed to do to stop the water was turn off its valve. In most people's homes, finding and operating this valve would require moving and throwing objects like plungers, tissue paper, cleaning products, body products, trash cans and other storage materials. Now compare the size of your house to your school buildings. If a situation occurred that required maintenance personnel to get to any utility control to lessen damage or prevent a catastrophe, you would like to expedite that process as quickly as possible.

When thinking about the size of the school building compared to your home, consider the building's storage rooms. Storage rooms sometimes have excess equipment, furniture or other materials tucked away out of sight and out of mind, creating housekeeping problems. Examples may include excess printer paper, wrestling mats, art supplies, computer notebooks and portable custodial cleaning carts. But in most circumstances, these rooms were not designed for this purpose. They were meant to house controls for electrical, water, HVAC, gas, etc. Most school buildings were not built with storage at top of mind, they were built strictly for education purposes, and it was also never envisioned how much material would need to be stored.

There can be several steps or options involved to ensure access to utility controls is always met:

1. Do not allow storage materials in rooms with utility controls and only allow maintenance personnel to access these rooms.
2. Take inventory of storage materials and remove or dispose of unused quantities.
3. Provide a barrier (commonly a chain link fence) around the controls that prevents storage materials from obstructing access. This solution can be costly, and a clear pathway still needs to be maintained to the access point of the barrier. If a pathway is not kept clear, this solution will not work.
4. Label the utility controls with signage and mark the floor of the area that needs to be kept clear with tape or paint.

The last point is the most realistic and affordable option for most organizations. When choosing this option, the points below are the best practices:

1. Always maintain at least three feet of space around controls. Consider placing signs stating this rule on or near the controls. Also consider highlighting the three-foot perimeter with floor tape.
2. The taped or painted area should be extended to provide enough space for control doors to open completely.
3. Just as important, a pathway or walkway needs to be kept clear. This area could also be marked by floor tape or paint.
4. Communicate the reasoning for the signage and floor marking to all who have access to these areas.

Any rule is only as good as its enforcement. If any of the above controls are put into place, but nothing happens when barriers or floor markings are ignored, the original problem will persist. Communication is the key to ensuring everyone is on the same page and can be helpful in preventing injuries and damaged property.

PPE: One size may not fit all

By Patrick Rucinski

Personal Protective Equipment (PPE) is the last line of defense to protect oneself from injury. We often forget the first word, "personal," when supplying equipment. Most people will choose comfort over safety when working if the equipment on hand is not comfortable or job specific. Foregoing PPE may not lead to immediate accident or injury, but this is not a chance one should be willing to take.

- PPE includes gloves, masks, safety glasses/ eyewear, harnesses, ear plugs or any additional items worn to provide protection from outside risks.
- Often PPE is seen as a non-specific form of protection.
- While not every piece of PPE needs to be different from each other in your organization, gaining input from those who use the equipment can lead to increased compliance, reduction in injuries, and increased morale around safety.

Risks

- A school employee is using a lift around the school's property for various repairs. Given the height of the lift, the employee should wear a fall protection harness. Since the school only provides one size/type of harness, the employee decides not to wear one. This creates an enormous amount of risk.
- A student in the vocational education laboratory is working on a project. None of the safety glasses provided by the school fit their face/head. The student sacrifices eye protection for the sake of being comfortable and gets injured; the school is now liable.

Best Practices/ Actionable items

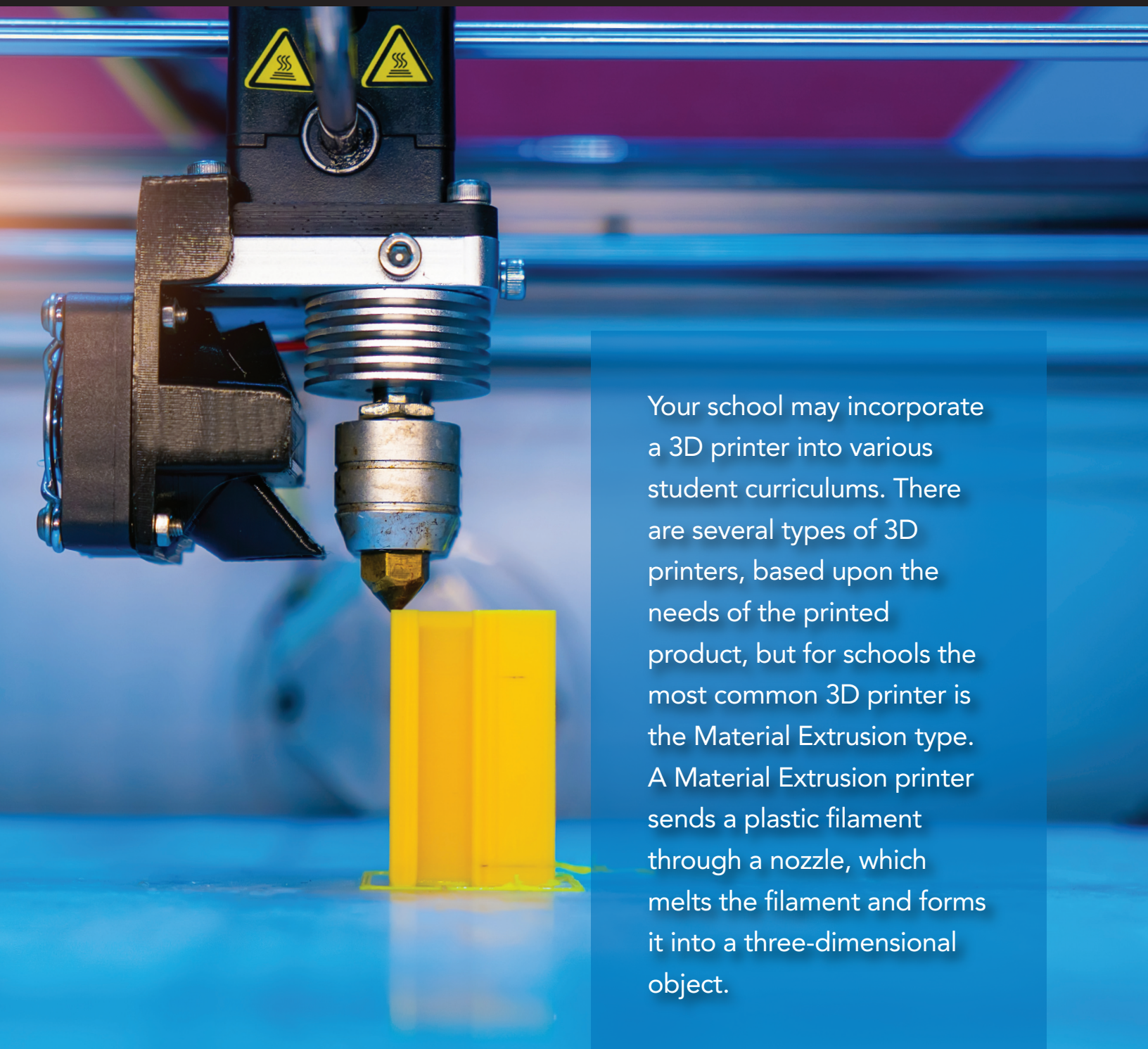
- **Variety** – Have a variety of shapes, sizes and styles of equipment like gloves, glasses, shoe coverings, ear plugs and dust masks available. These items have minimal cost and can be found with all these variables in play. Offering variety allows the affected party to pick and choose what works best for them.
- **Consultation** – Gain end user input on which types of materials and equipment are best suited for work in real world applications. Those using PPE will have a better understanding of what will help and what will impede their ability to perform work safely.
- **Communication** – Allow end users of PPE the ability to communicate whether equipment is meeting their needs to perform their duties safely. Open communication will promote a more cohesive team and streamline the process for equipment replacement/evaluation.

PPE needs to follow its namesake, personal. One size/style of equipment may not necessarily be correct for all types of work or workers. Having dialogue with effected parties can lead to diversification of PPE, resulting in the proper equipment being used for the task. Having a variety of PPE encourages effected parties to wear it when performing a task, even if the task only takes a short time. Additional resources available to aid in this practice are the Society for Human Resources Management and the HSE Network. These publications have many articles, videos and trainings available for PPE usage and enforcement.

3D PRINTER

RISK CONSIDERATIONS

By Mark Nease



Your school may incorporate a 3D printer into various student curriculums. There are several types of 3D printers, based upon the needs of the printed product, but for schools the most common 3D printer is the Material Extrusion type. A Material Extrusion printer sends a plastic filament through a nozzle, which melts the filament and forms it into a three-dimensional object.

3D printers come with various safety and health risks.

Risks:

- **Filament Toxicity:** Plastic filaments come in several types, but the two primary types are Polylactic Acid (PLA) and Acrylonitrile Butadiene Styrene (ABS). The International Agency for Research on Cancer indicates that Styrene is a possible carcinogen (cancer-causing) so ABS filament may be of a high toxicity. During the 3D printing process, the nozzle head that heats the filament releases by-products into the air. These by-products may be dangerous to humans if inhaled.
- **Burn Injuries:** A 3D printer produces heat so it can melt the filament material. Where there is heat, there is a risk of a burn injury.
- **Laceration Injuries:** Residual plastic filament may exist on the edges of the printed object upon completion of the print job. To "clean" the edges of the filament, one may attempt to use a knife or other sharp tool to scrape the excess residue from the printed object. This action could lead to a laceration injury.

Best Practices/Actionable Item:

- **3D Printer Filament:**
  - Choose a non-toxic filament. Consult your vendor on filament types/hazards and verify that information through the Safety Data Sheet.
  - Operate your printer only in a well-ventilated area away from people. Do not allow staff or students to stand over the printer (to watch it in operation) as this may result in the person inhaling a toxic by-product of the print operation.
  - Consult your printer's manufacturer for input on the necessity of a ventilated safety enclosure that could capture any toxic by-product of the print operation.
- **Safety Training:** Provide instruction to all operators of the 3D printer on the potential hazards of the filament type and the measures they can take to protect themselves from a potential toxic exposure.

- **Burn Safety:** Avoid immediate contact with the printer filament nozzle, which could be hot enough to cause a burn. Post a sign nearby warning people not to make contact with 3D printed objects or any of the internal printer parts until everything has cooled to the touch.
- **Laceration Safety:** Train staff on safe measures to "debur" the edges of freshly printed 3D objects. Consider the purchase and use of a deburring tool kit so you can debur 3D printed edges safely.

Take time today to analyze your school's 3D printer and all the facets involved with its operation. Determine the types of filament you use and their potential toxicity so you can prevent a potential illness. Consider developing written procedures on how to operate the 3D printer safely; including where to stand in relation to the 3D printer, when the operator can safely remove the printed object from the machine and how to safely clean/debur the edges of the printed object.

Have a risk question?
Ask our experts at
cmregent.com/risk-control/ask/

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