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RISK manager

INSIDE...

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CLEAN AGENT SYSTEMS IN SCHOOL SERVER & AV ROOMS

By Howard Crouch, Risk Control Consultant

In today's digital age, schools rely heavily on technology to support learning, manage operations and store sensitive data. At the heart of these systems is the server room—a space housing critical IT infrastructure that must remain operational around the clock. Protecting these servers from fire is essential, but traditional water-based fire suppression systems can do just as much damage as the heat and smoke from fires themselves. Similarly, the expensive electrical equipment in school AV rooms is vulnerable to the same risk of damage from water-based fire protection systems.

This is where clean agent fire suppression systems provide a reliable, non-damaging solution. These gaseous fire suppression agents are electrically nonconductive and do not leave residue upon evaporation.

There are multiple kinds of clean agents including carbon dioxide, inert gases and halocarbons. For occupied spaces, inert gases and halocarbons are generally safe, while carbon dioxide would not be used. While generally considered safe, inert gases and halocarbons have specific requirements for concentration and human exposure times. These are detailed in NFPA 2001.

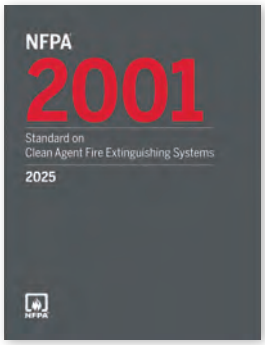
Requirements

The clean agent works by removing one of the four legs of the fire tetrahedron.

Whereas water works by removing heat, clean agents work by removing oxygen and cooling to starve the fire. Because clean agents do not remove heat, the concentration of clean agent must be held in the server or AV room for a minimum amount of time to reduce the fire temperature below the ignition point.

If the concentration of clean agent decreases, or the clean agent leaks from the room and allows oxygen to re-enter the space, the fire could potentially restart.

This brings up another requirement for a clean agent system—room integrity. The room must be sufficiently sealed to retain the minimum concentration of clean agent needed to suppress the fire. The room must support the initial discharge of pressure from the system and then be able to hold clean agent above minimum concentration.



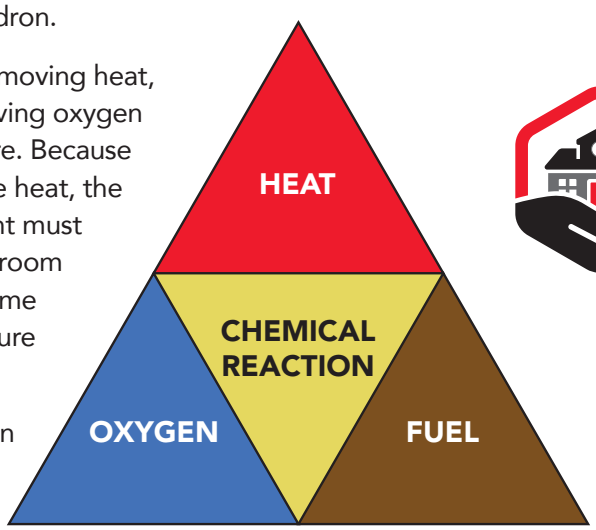
All these requirements, including room leakage testing, are detailed in NFPA 2001.

Water-based fire protection systems are typically more damaging in server and AV rooms than the threat of fire itself. It's important to cap these systems and replace them with the proper clean agent system to reduce the hazard of water damage on critical server room components and AV room equipment. The system should be installed by a qualified contractor in accordance with NFPA 2001.

Resources:

O'Connor, Brian. "Clean Agent System Basics: NFPA." Nfpa.Org, 6 May 2022, www.nfpa.org/news-blogs-and-articles/blogs/2022/05/06/clean-agent-system-basics.

Hart, Jonathan. "Room Integrity for Gaseous Fire Suppression Systems: NFPA." Nfpa.Org, 12 Mar. 2021, www.nfpa.org/news-blogs-and-articles/blogs/2021/03/12/room-integrity-for-gaseous-fire-suppression-systems.



CHEMICAL STORAGE ESSENTIALS

By Patrick Rucinski, Risk Control Consultant

Proper chemical storage is critical to keeping schools safe—whether in a high school chemistry lab, vocational education shop or maintenance storage area. From acids used in science experiments to cleaning supplies in custodial closets, every chemical has the potential to cause harm if mislabeled, improperly stored or mixed with incompatible substances. That is why secondary containers, accurate labeling and current safety data sheets (SDS) are essential tools for staff and students alike. By following best practices for chemical storage and understanding the risks of dangerous reactions, schools can minimize risk, protect health and ensure learning environments remain safe and compliant.

Improper chemical storage not only violates safety standards, but can create very real dangers for students, teachers and staff. When chemicals are mislabeled, left in unapproved containers or stored in the wrong conditions, accidents can happen without warning. Even small oversights can lead to harmful reactions, property damage or serious health risks. Here are some examples of what can happen when safe storage practices are ignored.

- A bottle of ammonia based cleaner stored next to bleach creates the risk of releasing toxic chloramine gas if accidentally mixed.
- Unlabeled containers in a chemistry lab could lead to a student or teacher using the wrong chemical in an experiment, causing unexpected reactions.
- Flammable solvents not stored in a flammable materials cabinet within a shop area could potentially start a fire due to the accumulation of flammable vapors.
- Strong acids stored in metal cabinets may corrode the shelving, eventually leaking and damaging both property and equipment.
- Expired or degraded chemicals left in storage can become unstable, leading to dangerous spills or other unexpected pressure build-up in containers.

To prevent accidents and ensure a safe learning environment, schools should adopt clear best practices for chemical storage and handling. These practices not only keep staff and students safe but also assist in maintaining compliance with safety regulations and extending the lifespan of valuable lab and maintenance supplies. By following simple, consistent procedures, schools can aim to minimize risk and foster a culture of safety.

INVENTORY: Complete an annual chemical inventory of each work area where chemicals are stored. The inventory will also assist in reducing quantities of chemicals on-site and promote proper disposal practices. A hazardous waste disposal vendor should perform chemical disposal; ensure a Certificate of Destruction/Disposal is obtained from the disposal vendor.

CONTAINERS/LABELS: Always transfer chemicals into approved, compatible containers. A Globally Harmonized System (GHS) compliant label should be affixed to each container.

SEPARATION: Store acids, bases, flammables and oxidizers in designated areas or cabinets to

prevent dangerous reactions. Note: Nitric acid should be stored in a separate cabinet from other acids to avoid potentially violent reactions.

SAFETY DATA SHEETS (SDS): Ensure current SDS for all materials in your facility are easily accessible to students and staff. These should be reviewed annually for updates.

ACCESS: Limit access to chemicals with hazardous properties to authorized staff only. Chemical storage rooms or cabinets should be secured via locks.

INSPECTION: Regularly inspect chemical containers, labeling and other concerns within the area, and address issues promptly.

TRAINING: Provide ongoing safety training to reinforce correct storage, labeling and emergency response procedures.

Wherever students and staff work closely with a wide range of chemicals in labs, shops and maintenance areas, safe storage practices are essential. By understanding the risks of improper storage, taking advantage of clear labeling and secondary containers, and making full use of safety data sheets, schools can minimize the potential risks associated with chemical handling and storage.

When paired with consistent best practices and regular training, these measures create a safe, well-organized environment that supports both education and well-being. Ultimately, proper chemical storage protects not just equipment and facilities, but more importantly, the people who learn and work with them every day.

Additional resources for proper secondary labeling and chemical storage can be obtained through the Occupational Health and Safety Administration (OSHA), and the National Institute of Occupational Safety and Health (NIOSH).

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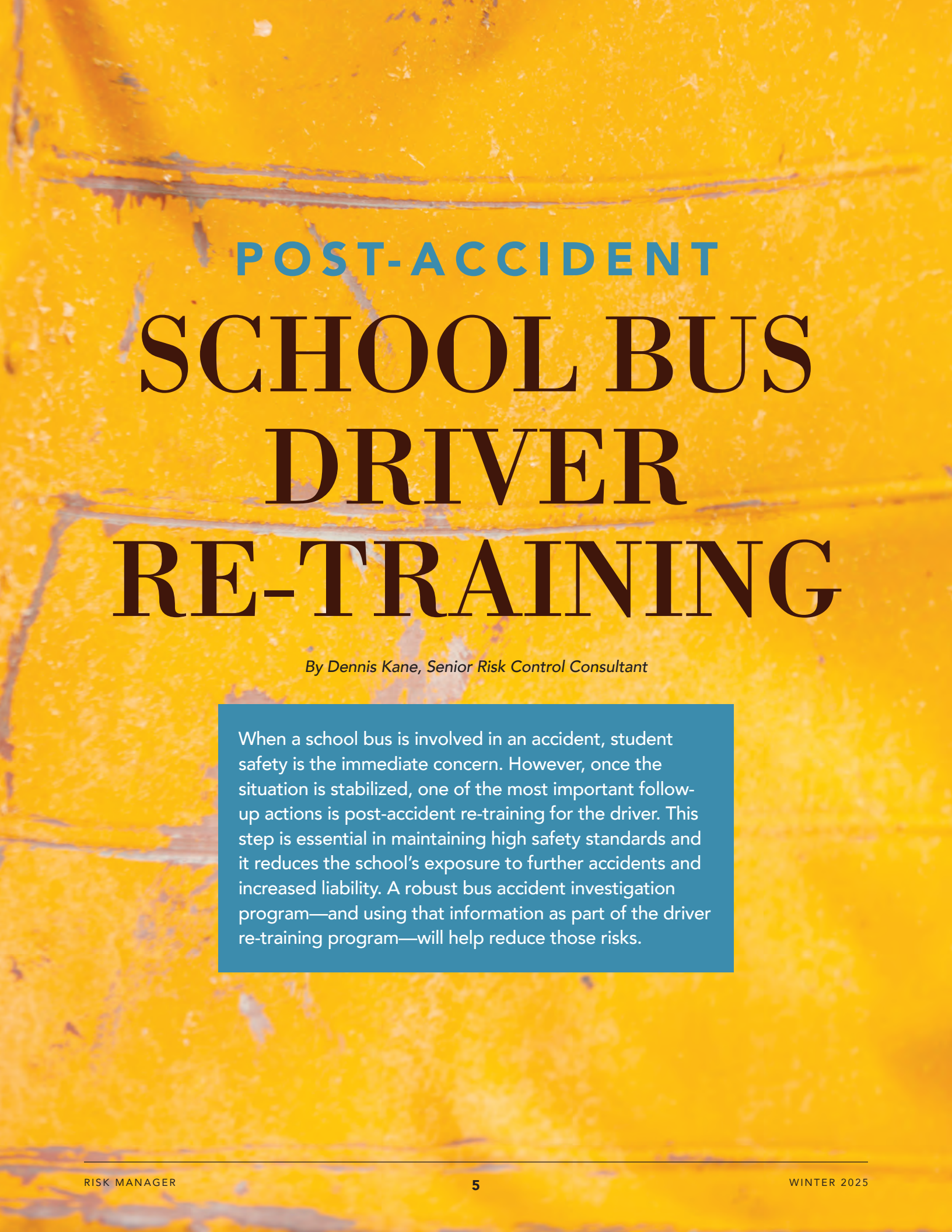

POST-ACCIDENT

SCHOOL BUS DRIVER RE-TRAINING

By Dennis Kane, Senior Risk Control Consultant

When a school bus is involved in an accident, student safety is the immediate concern. However, once the situation is stabilized, one of the most important follow-up actions is post-accident re-training for the driver. This step is essential in maintaining high safety standards and it reduces the school's exposure to further accidents and increased liability. A robust bus accident investigation program—and using that information as part of the driver re-training program—will help reduce those risks.

Why provide post-accident re-training? Simply put, re-training ensures the driver is fully prepared to return to the road safely. The re-training should include accident specific topics and relevant core safe driving principles to help the driver learn from the accident.

To get the most out of post-accident re-training, include the following:

1. ACCIDENT REVIEW

The process should begin with a detailed review of the incident. This can involve examining dash cam footage, telematics, police reports, and/or eyewitness accounts to understand what went wrong and whether it could have been avoided. Does the driver understand the factors that led to the accident and proper defenses?

2. DEFENSIVE DRIVING REFRESHER

The driver should receive instruction on relevant defensive driving techniques. These include safe following distances, scanning down the road and mirrors, keeping a safe cushion around the bus, reaction time, handling distractions, adapting to road and weather conditions as well as other topics.

3. HANDS-ON DRIVING EVALUATION

A behind-the-wheel assessment should be conducted to observe the driver's current habits and reinforce proper driving behavior. This can be done one-on-one or via a ride along. The driver's previous incident history or the severity of the incident should be considered in determining the type of hands-on evaluation needed.

4. POLICY AND PROCEDURE UPDATES

The driver should be briefed on your school's current driver rules and any applicable state and federal transportation department policies/rules. This is a good time to provide a refresher on accident scene and emergency procedures—even if they were followed or didn't apply to the incident.

5. SUPPORT AND COUNSELING

For drivers involved in serious or traumatic incidents, the training should provide information regarding access to counseling or employee assistance programs that may help them cope with the emotional aftermath.

Post-accident re-training reflects a school's commitment to student transportation safety. It also reassures parents and the public that drivers are held to high standards and supported in maintaining them. Ultimately, the goal should be to re-train following each incident, no matter how minor. It will also help prevent future accidents by ensuring accountability.

By investing in comprehensive post-accident protocols, schools can be more confident in their student transportation program and help make roads safer for everyone.

Public Use Areas & Equipment

WHAT ARE THE RISKS?

By Edgar Boord, Risk Control Consultant

In addition to educating today's youth, schools can also be staples of their local community. Public outdoor use areas, equipment and facilities on school premises are often a place for adults and children to enjoy the outdoors, get some exercise and have fun. Public use areas often include trail systems, athletic fields/tracks, pavilions and playgrounds—to name a few. Newer types of equipment and activities are being installed and made available to the public, such as manual exercise equipment, disc golf courses, and other innovative equipment that has become popular in recent years. These offerings to the public and local community often seem low risk; however, whenever something is made available for public use, the school's risk of liability greatly increases. It's important to take a closer look at the risks of each of these public spaces and equipment, as well as what can be done to reduce liability.

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Risks

- Uneven walking/riding surfaces for pedestrians and bikers.
- Failure of equipment or occupied structures.
- Injuries from misuse of equipment or activity areas.
- Abrupt storms and severe or extreme weather.
- Trespassing, unauthorized access and other security issues.
- Overlooked or unmitigated hazards and unsafe conditions.
- Struck-by incidents from sports equipment.
- Student/public cross-activity and exposure areas.
- Damage to property/equipment.
- Bites/stings from animals and insects.
- Falls from heights, strains, cuts/lacerations and a variety of other injury potential.

Risk Identification & Planning

Whether you have existing equipment and use areas, or are considering or planning them, you should start with identifying the risks to be addressed.

- Perform a risk analysis during the consideration phase of a public use space. Determine what the risks are, if they can be mitigated or minimized, and if the potential for liability and losses is too great to warrant the project.
- What are the potential injuries, property damages or other type of losses that can occur as a result? The potential for frequency and severity should both be considered during this process, with a mentality that frequency often breeds severity. It only takes one severe incident or loss to greatly outweigh the benefits.
- Engineer out the risks that were identified. Planning or "engineering out" risk is the best opportunity to mitigate specific risk potentials. Although risk can never be completely mitigated/avoided, certain elements can be adjusted or changed altogether to reduce the associated risk. For this part of the process, consider using a reputable/qualified third-party for any engineering and design plans.
- Additional public use project planning considerations:
  - Conducting hazard assessment of areas and equipment (initially, and routinely thereafter).
  - Avoiding any cross-activities.
  - Compliance with local, state and federal requirements/regulations.
  - Installing drainage/avoiding flood risks.
  - Preventing security issues and unauthorized access.
  - Seasonal inspections for pest problems.
  - Preventative maintenance schedule for equipment.
  - Preventing/avoiding potential for misuse.
  - Age appropriateness and related signage.
  - Preventing public and student crossover areas.
  - Any other engineering and design controls.

Existing Equipment & Use Areas

Some options for preventative measures may not be feasible at this stage; however, steps can still be taken to lower risk and liability.

- Many of the previously mentioned measures should still be done.
- This includes recurring efforts such as hazard assessments, preventative maintenance and pest control, as well as the measures and controls that should have been implemented from the start (i.e., additional safety features, signage, security controls, etc.).

Signage, Public Precautions and Assumption of Risk

Incident prevention and physical controls are obviously an important factor; however, reducing liability through signage and other written controls or agreements is the last line of defense if an issue were to occur. Consider the following:

- "No Trespassing" signs around the property's potential access points or trails.
- Age appropriateness signage for playground areas.
- Safe and proper use instructions for equipment and activities.
- Availability schedule and hours of operation (i.e., "Open From xx to xx").
- Assumption of risk signage in the school's favor.
- Waivers/hold harmless agreements where public admittance can be monitored/controlled.
- Other applicable safety and security signs to caution users and reduce liability.

Although you may want to share public use areas and facilities with your local community, it's important to take the time to determine the risks and potential for liability losses. Something that may be a unique and appealing attraction could result in a devastating loss—and the costs that come with it.

Pizza Conveyor Ovens: Why Exhaust Hoods and Automatic Extinguishing Systems Matter

By Derek Neubauer, Senior Risk Control Consultant

Pizza conveyor ovens are a quick and efficient way of making pizza, toasting sandwiches or warming precooked food. However, they produce heat and grease-laden vapors, which can cause fire and smoke. This means they require proper ventilation for safety and comfort. The current edition of the National Fire Protection Agency (NFPA) 96 and local building codes mandate a Type I hood system (for grease and smoke protection) over equipment producing grease-laden vapors. An automatic extinguishing system is also needed for this type of equipment. Automatic extinguishing systems are designed to detect and suppress fires at the earliest stage, reducing damage and injury risk. Installing the right hood and suppression system ensures compliance, safety and uninterrupted operation. They are usually found in school kitchens protecting ranges, deep fryers and tilt braising pans that can produce grease-laden vapors.

RISKS

- Grease buildup inside all cooking equipment, hoods and ductwork can ignite and rapidly spread fire through the ventilation system.
- Lack of proper exhaust can cause heat and airborne grease to accumulate, damaging nearby equipment and surfaces.
- A grease fire in unprotected equipment can quickly escalate, threatening staff safety and property.

BEST PRACTICES

- Confirm your pizza conveyor oven is installed under a Type I hood designed for grease-laden vapor removal.
- Install and maintain a UL 300-compliant automatic extinguishing system that meets local code requirements. Ensure the nozzles are properly adjusted and aimed specifically where grease-laden cooking is performed - not just over the entire cooking appliance.
- Consult certified professionals to provide hood, duct and filter cleaning and set a schedule for those cleanings moving forward.
- A certified fire protection contractor should perform necessary inspections of automatic extinguishing systems; if problems are found, cease all grease-laden cooking until any deficiencies are corrected.
- Provide a Type K fire extinguisher within a 30-foot walking distance of the equipment.
- Train staff on emergency procedures, including manual activation of the suppression system.

Properly venting and protecting pizza conveyor ovens is critical for safety and compliance. Regular maintenance and staff readiness ensure these systems perform when needed most. A well-designed hood and automatic extinguishing system protects your investment, staff, students and the building itself. By following codes and best practices, you keep your kitchen safe, clean and reduce the potential for fire.

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One-off Interior Vehicle Hazards

AND HOW TO COMFORTABLY MITIGATE THEM

By Mark Nease, Senior Risk Control Consultant

Drivers' Education teaches us how to safely operate vehicles, including defensive driving techniques and ensuring passenger safety. Over time, though, we can develop bad habits, not realizing how those habits could be detrimental to our safety. Here are some one-off automotive-related hazards you may not have considered, or realized how they could impact your life.

RISKS

- **Beverage Containers** – Since auto engineers began designing cupholders into vehicles, travel mugs and insulated tumblers have become common in automobiles. What better way to drive than to sip your favorite hot beverage from your insulated tumbler? But what do you think could happen if you're taking a sip from that tumbler when at the same time your driver's Supplemental Restraint System (SRS) airbag deploys in a sudden 1/20th of a second? The result could be reconstructive surgery or even a fatality.
- **Struck-by Unsecured Objects** – Any hard object, such as a plastic beverage container or ice scraper, placed in the rear tray or behind the front seats, could become a projectile in a sudden braking situation, striking the driver or front passenger on the head.

- **Hair Clips** – Plastic or metal hair clips serve their purpose but wearing them in a vehicle can become a hazard in the event of an accident. Depending on where you place the hairclips, your head/hairclip could strike a fixed interior surface, causing the device to impale your skull.
- **Front passenger's feet propped onto dashboard** – There have been numerous cases where the front passenger eases back in the reclined seat, takes their shoes off and places their feet onto the front dashboard, only to sustain severe injury to their facial bones and hip sockets when the airbag suddenly deploys.

No need for drastic concern over these hazards as they can easily be mitigated through behavioral changes.

- You can still drive and sip your favorite beverage. Choose cups that will collapse when impacted by an airbag. In fact, it's best not to place any hard object between your face and the SRS airbag deploy zone.
- Secure loose objects. Place items in the trunk or in the rear compartment of your SUV. Use the package tray blinds, if equipped in the automobile. Use safety nets and strategically placed hooks to contain grocery bags. Take all measures to secure loose objects in the vehicle.
- Based on the description of the "Hair Clips' hazard," consider not using hair clips in a moving vehicle. Take them with you and then apply them when you reach your destination.
- Vehicle passengers need to recognize that late model vehicles' SRS airbags can become a serious safety hazard if not respected. Respecting SRS airbags means following appropriate passenger safety protocols, such as sitting upright, fastening the seatbelt and keeping your feet on the floor.

Now that you've had an opportunity to consider some one-off interior vehicle risks, try to make changes to your behaviors to mitigate the risks of injuries. And, be sure to communicate these risks to your friends, family and loved ones so everyone can arrive safely.

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