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## Ken's Korner

### DATA CENTER SAFETY TIPS

Even though a data center appears to be a quiet, safe, unassuming environment there is safety risks all about. Electrical circuits, acids, gases, flammable materials, and fuels are just some of the areas that represent potential safety hazards.

Poor safety can lead to accidental injury and even death. Lost wages, lost productivity, medical expenses and administrative expenses. Where an injury can cost a company tens of thousands of dollars, a workplace death could cost in the millions. As great as these costs are, the cost to an organizations reputation and lost revenue due to equipment shutdown can be even greater.

#### TRAINING

- ✓ Require all personnel working in the data center to attend certified safety classes. New employees must be trained or accompanied by trained personnel before they are left to work on their own. Keep a log to ensure no one slips through the cracks. Classes should be repeated on an annual basis to ensure everyone is current on safety procedures. Have a safety designated person do random walk through tours to check all programs and PPE and insulated tools are being utilized.
- ✓ Document and standardize safety training program for personnel in data center. All new employees should be trained prior to being allowed to work alone within the data center, and classes should be repeated annually for all employees.
- ✓ Facility personnel need to have proper electrical safety training classes. If your company doesn't have "safety director" hire an outside firm to conduct safety training classes.
- ✓ It never hurts to observe employees as they do their jobs to ensure that they are performing tasks as per their training and your specifications.
- ✓ Emergency preparedness comes in many forms, fire drills, disaster recovery, and power outages. It is good practice to perform drills periodically to make sure everyone knows what to do in case of an emergency.

#### STAFF & PERSONAL PROTECTION EQUIPMENT

- ✓ Full PPE equipment should be worn when working in energized electrical panels.
- ✓ No facilities personnel should be building, installing or removing power whips without the proper license.
- ✓ Each facility employee should be outfitted in their own PPE equipment. The PPE equipment must be inspected prior to each use.
- ✓ Proper clothing for working on live electrified equipment, including face shields.
- ✓ Gloves. The gloves need to be tested on an annual basis for voltage leaks by an authorized firm. If found to be bad they must be replaced.
- ✓ Purchase insulated tool-kits designed to protect against electrical shock for each facility employee, so there is never an excuse not to use the right equipment.
- ✓ Not using proper tools and PPE equipment when appropriate should have consequences including discipline and possibly termination.
- ✓ If your data center is physically separate from the rest of your business, or other buildings. Have someone familiar or trained in first aid on each shift.



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## DATA CENTER SAFETY TIPS (CON'T)



### DATA CENTER (Inside the Computer Room) SAFETY

- ✓ All flow alarms and fire detection systems should be tested on a monthly basis.
- ✓ OSHA requires any permanent floor hole that could be walked into must have a standard railing or toe board surrounding it. Not covering hole cutouts in a raised floors while waiting for cables to be pulled when cabinets are installed could lead to a workplace injury. Using brushed grommets with integrated safety covers are very handy for concealing floor cutouts when dealing with expansion projects.
- ✓ Always use a floor panel puller when lifting floor panels.
- ✓ Portable two-sided caution signs are perfect for marking off areas where floor panels have been removed to provide access to raised floors. Keep a pair next to the floor panel puller as a reminder to be used.
- ✓ Make sure that server racks and cabinets are properly grounded and secured. Loading and unloading heavy equipment into unsecured racks and cabinets can lead to a tip-over hazard.
- ✓ If racks and cabinets are on castors, make sure the castors are rated for the weight that you are loading into them. Use of castors raises the racks center of gravity making it easier to tip.
- ✓ Strains and sprains from lifting and moving items are significant causes of workplace injury. Not lifting properly or not having proper equipment to assist personnel in lifting heavy equipment can lead to injury. With many servers weighting over 100 pounds, having proper lifting equipment is a must.
- ✓ Lack of proper fire detection and protection can cause a long-term downtime event and including loss of your entire facility.
- ✓ In larger facilities, not having floor layout diagrams posted within the site showing emergency exit locations where everyone can see them. Try using different colored floor tiles to mark the exit routes.



- ✓ Ample fire extinguishers throughout the raised floor area with signs identifying extinguisher locations placed high above the cabinets. Has your staff been trained in the different types and proper use of a fire extinguisher?
- ✓ Storing combustible material within the data center or inside server cabinets, why provide fuel to the ignition source.
- ✓ Hearing safety and sound abatement never seems to get much attention, but consider acoustical wall and ceiling materials or hearing protection to be used by personnel while in the data center for prolonged periods.
- ✓ Look for equipment placed too close to PDU/RPP's and A/C equipment in violation of the NEC stated distances.
- ✓ Make sure power feeds are color coded and properly labeled.
- ✓ Avoid extension cords running from one piece of equipment to feed another. Especially if the cords are undersized to support the load they are feeding. Extension cords should only be plugged into maintenance outlets and be only used to power tools, vacuum cleaners and test equipment.

### DATA CENTER (Outside the Computer Room) SAFETY

- ✓ Battery rooms need hydrogen gas detection and exhaust fans for proper air exchange.
- ✓ Every battery room should have a combination eye wash/deluge shower station to provide a means of decontaminating personnel exposed to and contaminated by battery acid. These shower stations should have a water flow alarm hat is monitored in a remote station such as a guard desk or master control room that is occupied 24x7. If a person is exposed to battery acid they need to be able to enter the shower and stay in there for long enough to neutralize the acid without having to leave to call for help. The temperature of the deluge shower should be room temperature, too cold or too hot and the user will have trouble staying in for prolonged periods limiting its effectiveness.
- ✓ Keep a full first aid kit outside the data center in a staging room or the control room.

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Ken Koty, former data center facilities manager with over 30 years of hands-on experience shares management practices that made him a 12 year award recipient for continuous uptime from the Uptime Institute. PDU Cables does not guarantee the results of outcomes by using information contained in this document.