

Welcome!

Fire Prevention Planning



by O'leams Environmental,
Health and Safety Services

Overview

- Elements of Fire Prevention Planning
 - Identifying fire hazards
 - Prevention Strategy
 - Related Training

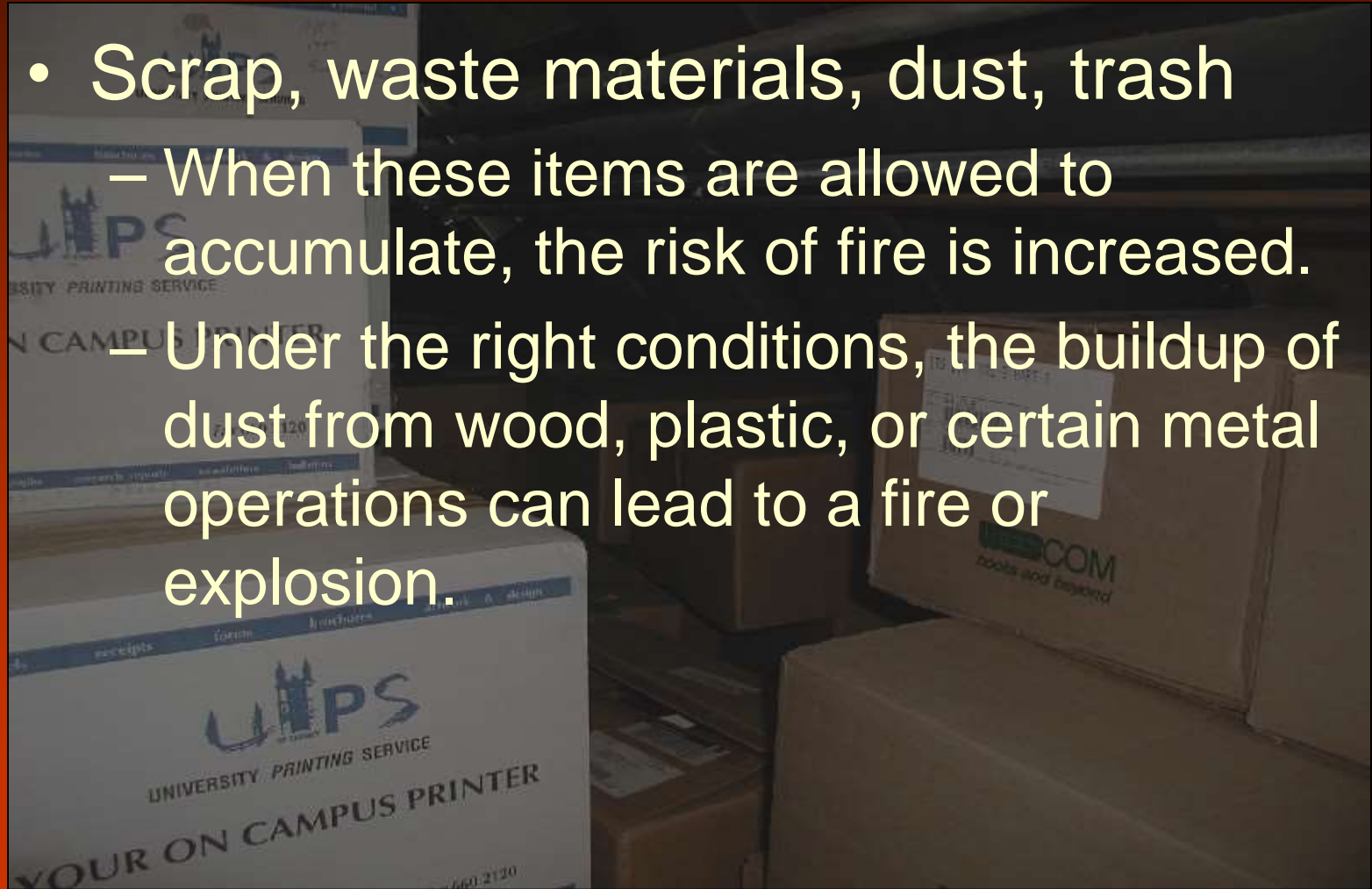


Elements of Fire Prevention Planning

- List all major fire hazards.
- Proper control of hazardous materials
 - including flammable and combustible liquids.
- Control potential ignition sources.
- List fire protection equipment.
- Regular inspection and maintenance.
- Responsible employees for fuel sources.

Identify the Hazards

- Scrap, waste materials, dust, trash
 - When these items are allowed to accumulate, the risk of fire is increased.
 - Under the right conditions, the buildup of dust from wood, plastic, or certain metal operations can lead to a fire or explosion.



Identify the Hazards



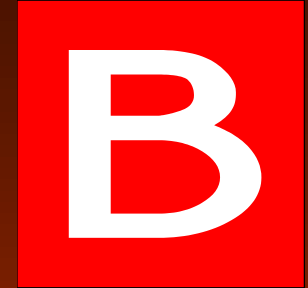
- Combustible materials
 - Ordinary combustible materials, like paper, cardboard, wood, and products made from these materials can present a fire hazard when they are allowed to accumulate or are stored improperly.
 - Foam or plastic cups, utensils, materials close to heat sources burn rapidly and give off dense, toxic, black smoke.

Identify the Hazards

- Combustible materials
 - Oily rags or other materials soaked in oil can spontaneously combust if placed in areas where the air does not circulate.



Identify the Hazards



- Flammable materials
 - The unsafe use, storage, dispensing, or disposal of flammable materials can be a prime source of fires and explosions.
 - Read labels of all spray cans to identify those with flammable gas-propellants.
 - Butane and propane are the most common and should never be exposed to heat or flames.

FLAMMABLE

Identify the Hazards



- Electrical issues
 - Extension cords and multiple plug adapters may only be used for temporary operations.
 - Overloaded circuits, damaged wiring, and defective switches and outlets can all lead to electrical fires.
 - Placing space heaters near, or in contact with, combustible materials poses a fire hazard.

Identify the Hazards

- Electrical issues
 - Small portable fans can pose a fire hazard if they are placed near combustible materials, or where the blades of the fan can easily catch items.
 - Damaged wiring on portable fans, and mounting portable fans in walls also increase your fire risk.



Identify the Hazards

- Hot work
 - Any operation involving heated materials or open flames can present a fire hazard.
 - Hot work procedures have been developed and are part of this program.



Identify the Hazards

- Machines and equipment
 - Machines that are not lubricated properly can overheat and start a fire.
 - Electrical problems and equipment defects can lead to a fire.

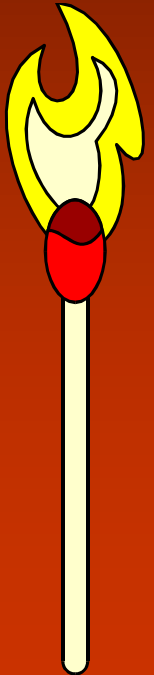


Identify the Hazards

- Renovations and maintenance
 - Renovation or maintenance projects that do not meet the requirements of the Nigeria building or fire codes can result in improper egress, construction methods or materials, electrical hazards, and so on.

Identify the Hazards

- Careless Smoking
 - Smoking is prohibited in facilities owned or leased by the university.
 - Some exceptions are made for certain residential facilities.
 - Outdoors, discarded smoking materials carelessly tossed in waste containers or into landscaping can easily start a fire.



Prevention Strategy

- Housekeeping
 - The accumulation of combustible materials (such as cardboard boxes, magazines, and paper products) is prohibited.
 - Combustible material must not be stored any closer than 36” from a heating appliance or electrical light.
 - Properly dispose of items no longer in use.

Prevention Strategy

- Housekeeping
 - Store materials at least 18” from the ceiling in rooms that have sprinkler systems.
 - Store materials at least 24” from the ceiling in rooms that do not have sprinkler systems.
 - Exceptions are allowed for attached wall shelving not located directly under a sprinkler head.



Prevention Strategy

- Housekeeping
 - Decorations, signs, and other such items cannot be hung on or near the sprinkler head.
 - Portable fire extinguishers cannot be obstructed, and must be clearly visible with notification signs displayed.



Prevention Strategy

- Housekeeping
 - Keep passageways clear of obstacles, including furniture and other equipment.



Prevention Strategy

- Housekeeping
 - Maintain premises free of unneeded and unnecessary combustible materials.
 - Surplus or properly discard unused items being stockpiled or hoarded.
 - Hoarding increases the risk of fire and possible structural damage due to increased weight loading on floors.



Prevention Strategy

- Fire-Rated Doors
 - Fire-rated doors must not be blocked open with wedges, stoppers, or anything else!
 - These doors are to remain closed to reduce fire and smoke spread through the rest of the building.



Prevention Strategy

- Fire-Rated Doors
 - Magnetic door-hold-open devices are permitted only if they are tied into the fire alarm system or to a single station smoke detector located in front of the door.

Note: Fire-rated doors are generally found at any opening to a corridor, stairwell, storage room, mechanical room, or electrical equipment room.

Prevention Strategy

- Fire-Resistant Barriers
 - All building materials used in renovation and building projects must meet the state fire code requirements for fire-resistance.
 - All work must be performed in accordance with the building code requirements.
 - All renovation projects must comply with Site Policy.

Prevention Strategy

- Fire-Resistant Barriers
 - All penetrations of floors, ceilings, and walls are avenues for smoke and heat travel.
 - These penetrations must be properly fire-stopped where required.
 - For example, in walls that are fire-rated or serve as smoke barriers.
 - This includes the replacing of ceiling tile when disturbed for any reason.



Prevention Strategy

- Electrical
 - Inspect all wiring, switches and plugs for damage.
 - Repair must be performed by an “Electrical Qualified Person”.
 - Contact Physical Plant if necessary.
 - All outlets, junction boxes, and electrical panels must have proper covers.



Prevention Strategy

- Electrical
 - Junction boxes and breaker/disconnects in electrical circuit panels are required to be properly labeled.
 - Use of unapproved electric cords or equipment in wet or damp locations may result in a short circuit.
 - Do not connect/disconnect electrical cords with wet hands.

Prevention Strategy

- Electrical
 - Do not overload motors or circuits, which can easily become a source of ignition.
 - Report any problems with lighting fixtures or heating elements to Physical Plant immediately.



Prevention Strategy

- Electrical
 - Improper use of extension cords is prohibited.
 - Always plug extension cords and power strips directly into building wiring – no “daisy chaining”.
 - Use heavy-duty, grounded, single appliance extension cords only. Light/medium duty “zip” cords are prohibited.



Prevention Strategy

- Electrical

- Improper use of extension cords is prohibited.

- Do not use extension cords in place of permanent building wiring.
 - Do not use extension cords for an extended period of time (90 days is a good rule of thumb).
 - Have additional outlets installed if necessary.
 - Use a power strip with breaker protection in lieu of extension cords.

Prevention Strategy

- Electrical
 - Multiple plug adapters are prohibited.
 - Have additional wall outlets installed.
 - Use power strips with breaker protection instead.



Prevention Strategy

- Flammable and Combustible Materials
 - Where possible, substitute flammable materials with safer, less/non flammable, non-toxic materials.



Prevention Strategy

- **Flammable and Combustible Materials**
 - Store flammable liquids properly.
 - At least one fire extinguisher in the area.
 - Large storage areas should have a fire protection system installed.
 - Use flammable liquid storage cabinets where greater quantities of liquids are needed.
 - Contrary to popular belief, these cabinets are not designed to contain a fire, but to prevent an outside fire from reaching the contents for a period of 10 minutes.

Prevention Strategy

- Flammable and Combustible Materials
 - Cabinet storage limits are as follows:



- No more than 120 gallons of Class I, II, & IIIA combined in one cabinet.
- Only 3 cabinets allowed in each fire area, unless each group of 3 can be separated by 100 feet.
- If the building has a sprinkler system, the number of cabinets can be increased to 6.
- If stored amounts exceed these limits, a separate inside storage room is required.

Prevention Strategy

- Flammable and Combustible Materials
 - Containers should be tightly sealed when not in use.
 - Liquids should be stored in an area where temperature is stable to avoid pressure buildup from vaporization.
 - Approved safety cans are recommended for smaller quantities.
 - The spring-loaded safety cap prevents spillage, prevents vapors from escaping, acts as a pressure vent if engulfed in fire, and prevents explosion and rocketing of the can.

Prevention Strategy

- Flammable and Combustible Materials
 - Quantities of flammable and combustible liquids located outside of storage cabinets should be restricted to one day's supply, or to what can be used during a single shift.



Prevention Strategy

- Flammable and Combustible Materials
 - Some flammable liquids, such as xylene, toluene, benzene, and gasoline have a tendency to accumulate a static electric charge, which can release a spark that ignites the liquid.
 - Always bond metal dispensing and receiving containers together before pouring.



Prevention Strategy

- Flammable and Combustible Materials
 - To bond containers, each container is wired together and one container is connected to a good ground point to allow any charge to drain away safely.
 - Because there is no easy way to bond plastic containers, their use should be limited to smaller sizes (no more than 4L).

Prevention Strategy

- Flammable and Combustible Materials
 - To prevent the accumulation of vapors inside of storage areas, a continuous mechanical ventilation system must be in place.
 - Both makeup and exhaust air openings must be arranged to provide air movement directly to the exterior of the building.
 - Exhaust ventilation ducts must be exclusive to the system and used for no other purposes.

Prevention Strategy

- Flammable and Combustible Materials
 - All nonessential ignition sources must be eliminated where flammable liquids are used or stored.
 - Common ignition sources include:
 - Open flames from cutting and welding
 - Furnaces, matches, heaters, smoking materials
 - Static electricity, friction sparks
 - Motors, switches, circuit breakers



Prevention Strategy

- Flammable and Combustible Materials
 - Materials that contribute to a flammable liquid fire should not be stored with flammable liquids. For example,
 - Oxidizers
 - Organic peroxides

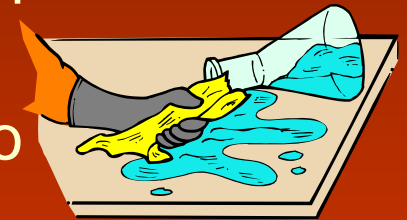


Prevention Strategy

- Flammable and Combustible Materials

- If a spill occurs:

- Limit spread by diking with suitable absorbent material.
- Minimize vapors by covering surface of spill with same absorbent material.
- Notify supervisor immediately. Call 911 to Fire Department if necessary.
- Contact O'leams for assistance and guidance.
- Ensure all sources of ignition are off or controlled.
- Begin cleanup right away.



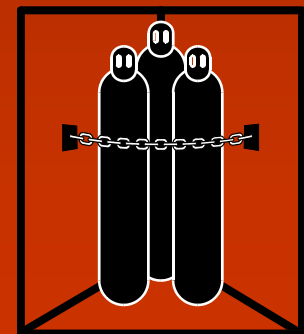
Prevention Strategy

- Compressed Gas Cylinders
 - Gases in these cylinders can pose fire or explosion hazards, may be toxic, or can displace oxygen in the area.
 - Perform a visual inspection of the cylinder and refuse delivery if the cylinder appears to be damaged or defective in any way.
 - Cylinders must be stored in compatible groups, with flammables separated from oxidizers and corrosives.



Prevention Strategy

- Compressed Gas Cylinders
 - Oxygen cylinders must be at least 20 feet from flammable and combustible materials.
 - Separation can be by barrier that has a fire-rating of at least ½ hour, such as concrete block or sheet metal, that is at least 5 feet in height.



Prevention Strategy

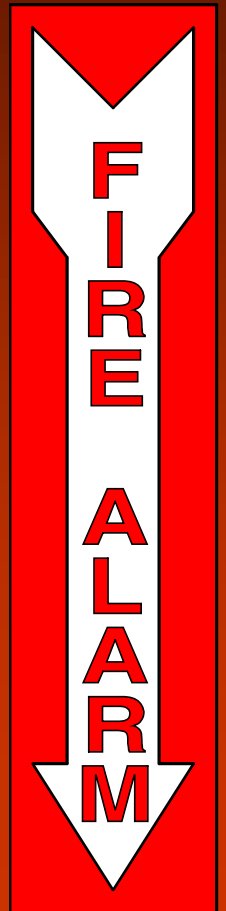
- Compressed Gas Cylinders
 - Gas cylinders, or any other hazardous material, cannot be stored in public hallways or unprotected areas.
 - Nonflammable cylinders must be at least 5 feet from exits or unprotected openings such as windows.
 - Flammable cylinders must be at least 25 feet from exits and windows.

Prevention Strategy

- Compressed Gas Cylinders
 - Keep valves closed and put caps on cylinders when not in use.
 - Never store gas cylinders near radiators or other heat sources (including direct sunlight).
 - Contact O'leams Fire Safety for bulk storage rooms or new installations of storage areas.

Prevention Strategy

- Fire Protection Systems
 - Not all buildings are equipped with building fire alarms.



Prevention Strategy

- Fire Protection Systems
 - If your building is not equipped with a fire alarm system, occupants will need to communicate to others in the building by yelling “FIRE” as they exit the building, or by other means as defined in the building’s Emergency Action Plan.

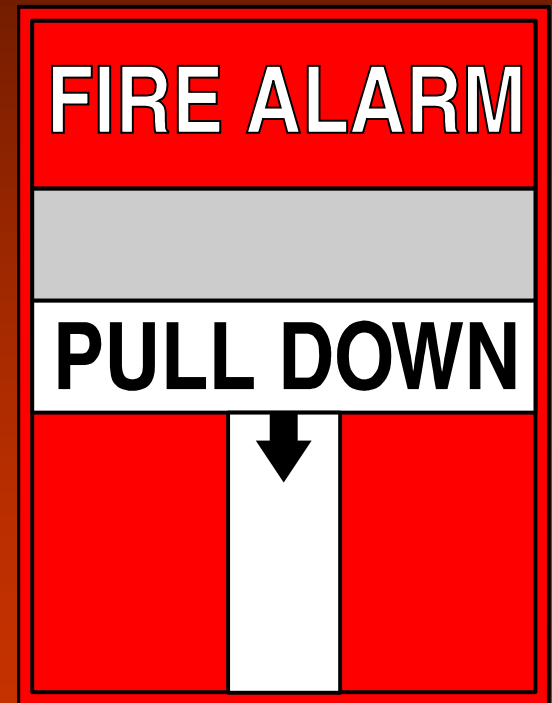


Prevention Strategy

- Fire Protection Systems
 - Automatic fire alarm systems are installed to facilitate notification of building occupants of a fire emergency.
 - Various types of smoke and heat detectors, along with manual pull stations, are linked to the alarm system.
 - When activated, the fire alarm system sends a signal and sounds an audible and/or visual alarm in the building.

Prevention Strategy

- Fire Protection Systems
 - Manually activated pull stations are located along building exit routes.
 - All buildings equipped with fire alarms will have manual pull stations (i.e. red boxes).



Prevention Strategy

- Fire Protection Systems
 - Fire suppression systems are more commonly known as “sprinkler systems”.
 - Several types are present in campus buildings.
 - The most common type uses water and is designed to extinguish small fires and/or reduce the spread of fire to provide building occupants time to evacuate.

Prevention Strategy

- Fire Protection Systems
 - Fire suppression systems are interconnected to the building fire alarm.
 - When a sprinkler head is activated, it automatically activates the building fire alarm.
 - The building fire alarm can also be activated by smoke detectors or manually without the sprinklers going off. This is how a fire drill is conducted.

Prevention Strategy

- Fire Protection Systems
 - Other types of fire suppression systems include dry pipe water and wet chemical systems.
 - These systems are found:
 - where hazardous materials are located,
 - in commercial kitchen hood exhaust systems,
 - in areas where freezing is a concern.

Prevention Strategy

- Fire Protection Systems
 - Each existing commercial cooking appliance, such as a grill, deep fryer, or any other appliance that produces grease-laden vapors, is required to have an approved commercial kitchen exhaust hood and duct system that is protected with an automatic fire suppression system.

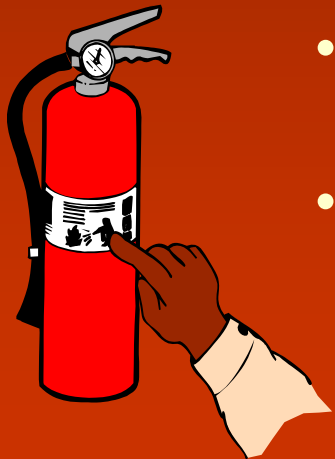
Prevention Strategy

- Fire Protection Systems
 - These commercial kitchen systems must be appropriate for the hazard.
 - The sprinkler heads within the hoods require regular maintenance and cleaning to remove deposits of residue and grease from the system.

Prevention Strategy

- Fire Protection Systems

- Fire extinguishers can play an important role in the fire protection program. How successfully they can function, however, depends upon the following conditions having been met:



- Extinguisher is properly located, is the proper type for the fire, and is in working order.
 - The fire is discovered while still small enough to be extinguished, and someone is ready, willing, and able to use the extinguisher.

Prevention Strategy

- Fire Protection Systems
 - Consider the following factors when selecting portable fire extinguishers :
 - Nature of flammables and combustibles in area,
 - Potential severity of any resulting fire,
 - Effectiveness and ease of use of the extinguisher,
 - Personnel available to operate the extinguisher, their physical abilities and emotional reactions,
 - Environmental conditions,
 - Suitability of extinguisher for its environment.

Prevention Strategy

- Fire Protection Systems
 - Consider the following factors when selecting portable fire extinguishers:
 - Anticipated adverse chemical reactions between extinguishing agent and burning materials,
 - Health and operational concerns,
 - Upkeep and maintenance requirements for the extinguisher.



Prevention Strategy

- Building and Renovation Projects
 - O'leams Department of General Services, Division of Engineering and Buildings (DEB) recently instituted a new building permit policy that affects all state agencies.
 - Under this policy, we are required to issue building permits for all renovations and construction projects costing less than N1,000,000.

Prevention Strategy

- Building and Renovation Projects
 - The Director of Physical Plant has been designated as the Agency Representative to issue permits and ensure that the site meets all legally mandated and requirements.

Prevention Strategy

- Miscellaneous Requirements
 - Landscaping must not:
 - Impede fire vehicle or emergency responder access to a building.
 - Obstruct access to fire hydrants, fire department connections or other fire sprinkler test valves and other emergency devices.
 - Obstruct or cause a tripping hazard for occupants evacuating a building.
 - Obstruct exits from doors, windows, or other designated evacuation points from a building.

Prevention Strategy

- Miscellaneous Requirements
 - Unless the condition is allowed by the Nigeria building code, or has been approved by the Nigeria Tech Building Code Official:
 - Holes in fire-rated walls or smoke barriers will not be permitted.
 - Doors, windows, hatches, visual panels, etc. may not breach a firewall or smoke barrier.

Prevention Strategy

- Miscellaneous Requirements
 - Cables, equipment cords, etc. may not be placed in or run through any permitted opening in a rated fire wall or smoke barrier, such as through a door or within ventilation ductwork.

Prevention Strategy

- Miscellaneous Requirements
 - All wood and metal shavings must be cleaned and removed from the building at the end of the job or the workday.
 - All shops with machinery that produces hazardous shavings or dust must have an approved dust collection system.
 - This system must be in operation any time the equipment is in use.



Prevention Strategy

- Miscellaneous Requirements
 - Lint catchers in clothes dryers should be emptied after each load.
 - Check the area behind the washer and dryer periodically for lint or trash buildup and clean as necessary.
 - Dryer vents must exhaust to the exterior of the building.

Prevention Strategy

- Miscellaneous Requirements
 - For automotive and industrial shops, at the end of the work day or as necessary:
 - Clean all work areas of oil to prevent buildup.
 - Return all oils and flammables to their proper storage cabinet/area.
 - Turn off all power equipment or unplug.
 - Turn off all fuel valves and power to such systems.

Prevention Strategy

- Miscellaneous Requirements
 - Parts washers may use flammable solvents. Check the MSDS for the product and follow guidelines, or find a less hazardous substitute.
 - Spray finishing with flammable materials is only allowed in approved paint booths, or with procedure approval by the O'leams Fire Safety Engineer.

Prevention Strategy

- Miscellaneous Requirements
 - For Art Departments:
 - Flammable liquids used to create, or in the display of artwork, may only be used with written approval from O'leams Fire Safety Engineer.
 - Electrical wiring and devices used in art creations or displays must meet National Electric Code requirements for temporary wiring.

Fire Emergency Training

- Inform employees of the following:
 - Fire hazards in their work area.
 - Protection measures specific to them.
 - Fire Prevention Plan requirements.

Related Training

- Portable Fire Extinguisher Training
- Public Assembly Attendee Emergency Procedures Training
- Compressed Gas Cylinder Awareness
- Electrical Safety

Contact O'LEAMS at
+2348175774050 to
schedule these classes.

For more information:

Contact the O'LEAMS Fire Safety Engineer at +234-8175774050 or totalsafety@oleams.com for a copy of "Fire and Life Safety Program" or visit our website at www.oleams.com

Thank you!