

Fire risk in the laboratory

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Objectives: Fire, in both biological and chemical laboratories, is a serious hazardous situation with high likelihood to occur which force us to do a complete assessment for such risk in order to take control measures to avoid that risk in the laboratories.

Material and methods fire hazard in laboratories has high probability to take place with dangerous consequences to the surrounding which puts the facility at risk. So strict control measures should be done built upon 3 major steps: 1st step is recognizing the hazards by using laboratory inspection check lists and assessment sheets kept in the laboratory manual. The 2nd step is evaluating the lab including reviewing of housekeeping and storage practices because a good housekeeping facilitates the access to emergency equipment. Also all lab areas must be free from empty boxes, papers or any unnecessary material that helps in ignition. Proper storage of chemicals, especially the flammable ones, also helps in reducing the potentiality of firing in labs. Maintain clear access to emergency equipment such as eye wash station, safety shower and fire alarms. Keep exit paths clear of all obstructions. Ensure that the chemicals are stored properly (for example, keeping acids away from bases and also not to keep more than 10 gallons of flammable chemicals outside the storage area). We should make sure the fire alarms are functioning properly. We must write down a suitable exit plans built upon a deep knowledge of the lab building, and not to wedge doors or put clutter around the doors. We must draw a clear exit chart plan and familiarize the staff with it so they can leave the building immediately, if a fire alarm sounds. The 3rd step is how to protect yourself with appropriate PPE and emergency equipments with special attention paid to PPEs of the lab workers (for example, wearing clothes made of natural fire, instead of cotton, which offer a better protection in case of fire). Lab workers should be aware and qualified with the usage of different fire extinguishers.

Fire extinguishers are mainly classified into 4 major classes: type A used to extinguish paper, cloth, wood, plastic, type B used to extinguish gasoline, alcohol, oil and solvents, type C used to extinguish electrical equipment and electrical sources and type D used to extinguish fire including sodium, potassium and magnesium. Generally, the fire extinguishers used according to PASS method, where P is for pulling the safety pin from the handle, A is for aim at the base of the fire, S is for squeezing the handle trigger and S for sweeping from side to side

Results: By using the above steps we managed to offer a complete protection for our labs and ourselves from the fire hazards.

Recommendations: the above steps offer satisfied protection for health, safety of laboratories from the fire hazards.