How Secure is Your Science Laboratory and School?

After the tragedy of 9/11 in New York, Washington and Pennsylvania, and the advent of anthrax incidents, particular attention has been given to upgrading existing workplace security and creating workplace security procedures where they had not existed.

Over the past few years, some school districts fell victim to their own form of terrorism. Security had already been addressed in many school districts across the nation as a result of Columbine type of terrorist actions and workplace violence.

The purpose of this article is to provide some strategies on making science laboratories in schools not only safer, but also more secure. This is of special importance, given that hazardous materials and other dangerous artifacts found in science laboratories can be the focus of terrorists.

Regulatory Standards

The Occupational Safety and Health Administration's (OSHA) was established to help employers make the workplace safe for employees. Its "prime directive" for employers is to develop and maintain a safe working environment for all employees. Regulatory standards such as the Hazard Communications Standard, the Laboratory Standard, the Bloodborne Pathogens Standard, Emergency Action Plans, Hazardous Materials, and others, provide direction toward meeting this "prime directive."

Additional safety and security support can be found coming from such agencies as the Environmental Protection Agency (EPA), National Institutes of Health (NIH) and the Centers for Disease Control & Prevention (CDC). All federal, state and local standards and regulations determine the level of compliance in each of the items addressed. Be aware of safety expectations from OSHA, EPA, NIH, CDC, state and local health, building, and other agencies. The science teacher and supervisors as specialists, need to work in concert with administrators in attempting to provide a safe and secure working environment.

Creating and/or Upgrading Security - the Laboratory

The following list is applicable to the school science facility - laboratories, preparation rooms and storerooms. Its purpose is solely to raise levels of awareness relative to safety and security. It is by no means designed to be a complete prescription.

A. Entrances, Exits, Stairways and Hallways - All means of egress should be clear and unobstructed to allow for safe evacuation. Proper signage should be posted as appropriate.

B. Laboratory Access - All access doors to laboratories should be posted as laboratories. All doors should remain closed and locked when unattended. Only certified science teachers should have access to laboratories when hazardous materials/equipment are present. Only certified science teachers and administrators/facilities maintainers/custodians should have keys to laboratories, storerooms and preparation rooms.

C. Safety Equipment Operation - All showers and eye wash equipment must be inspected and in operational order in areas housing or using hazardous materials. A minimum of monthly inspections should be required.
D. Personal Protective Equipment - Safety splash goggles, safety glasses, gloves, aprons, etc., should be easily accessed and are in good condition. Respirators should be available as appropriate under the OSHA Respiratory Protection Standard.

E. Fire Extinguishers - ABC rated fire extinguishers should be available in the laboratories, storerooms and preparation rooms. The extinguishers should be appropriately inspected and located for easy access. All science employees should annually be trained in the use of the extinguishers.

F. Pressurized Gas - All pressurized gas cylinders must be placed in an upright position and properly secured. Appropriate signage and cylinders per square footage must be adhered to.

G. Electrical Energy - All circuits in science laboratories, preparation and storerooms should have ground fault circuit interrupter protection (GFCI), in addition to easily accessible master shutoff switches with appropriate signage.

H. Gas Energy - All laboratories, preparation and storerooms should have master gas shutoffs with appropriate signage.

I. Water - Master water shutoff valves should be easily accessible with appropriate signage.

J. Fume Hoods - Fume or exhaust hoods should have periodic inspections for appropriate operation such as face velocity. The hood's stage should not be used as a storage area for hazardous chemicals, lab ware or any other items.

K. Hazardous Chemical Storage - All hazardous chemicals should be properly labeled, dated and stored. The areas housing hazardous chemicals should have restricted access and a high level of security.

L. Laboratory Hygiene - No drinking, eating, smoking, etc. should be permitted in the laboratory, save exceptions approved by the chemical hygiene officer.

M. Appliances - All appliances such as refrigerators, microwaves, ovens, etc., should be appropriately labeled for intended use.

N. Ventilation - Laboratory and preparation rooms should have "negative pressure" relative to corridors.

O. Housekeeping - Appropriate housekeeping must be secured to reduce or eliminate trip/fall hazards, provide adequate clearance of sprinkler systems, provide access to emergency equipment, have an unobstructed means of egress, etc.

P. Emergency Lighting - Emergency lighting should be available to assist evacuation in power outages as appropriate. The lighting should be inspected periodically to ensure operation.

Q. Evacuation Plans - Evacuation plans should be posted in appropriate sites, in addition to emergency numbers. All laboratories, preparation rooms and storerooms should have communication access in cases of emergency.

Creating and/or Upgrading Security - the Facility
The school building or facility should also have security needs addressed. This is the first "line of defense." These simple recommended procedures will not guarantee a 100% secure workplace. However, they will raise everyone's level of awareness and help the building become more secure - both physically and psychologically! The
recommended procedures include:

A. Designated Reception Area - The building should have a designated entrance and receptionist area to control access. All remaining entrance doors should be locked.

B. Visitors - Once signed in, visitors should be escorted to designated work areas by employees.

C. Employees - All employees should wear employee photo identification.

D. Strangers - Employees should challenge any unaccompanied stranger(s) in the workplace.

E. Mail - Employees should be trained and be provided with personal protective equipment (e.g., latex or vinyl gloves) to sort mail. Protocols should be in place to deal with suspicious items.

F. Lockdown/Evacuation Procedures - Employers should develop both lockdown and evacuation procedures for employees and students. Appropriate drills should be exercised. OSHA requires emergency preparedness plans for employees in its 29 CFR Part 1010.30 and 29 CFR Part 1910.165 standards. These standards mandate that employers provide emergency action plans and fire prevention plans. They include:

1. Emergency escape procedures and escape route assignments.

2. Procedures for employees who remain behind to operate essential operations.

3. Procedures to account for all employees after an evacuation is completed.

4. Rescue and medical duties for employees with those responsibilities.

5. Procedures for reporting fires or other emergencies.

6. Names and titles of persons to contact for explanations or further instructions.

Final Thoughts!

Remember - "AAA" - Awareness, Assessment and Action are keys to safety and security - be prepared!

Additional Resources:

American Conference of Governmental Industrial Hygienists, Inc., http://www.acgih.org

Canadian Center for Occupational Health and Safety, http://www.ccohs.ca

Centers for Disease Control and Prevention, http://www.cdc.gov/


Occupational Safety and Health Administration, http://www.osha.gov

LIVE LONG AND PROSPER WITH SAFETY!

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