A technical reference bulletin by the Risk Control Services Department of the Glatfelter Insurance Group

Glatfelter Brokerage Services

RISK COMMUNIQUÉ

Chemical Management Plans for School Laboratories

A Chemical Management Plan for school laboratories provides safety guidelines to follow regarding chemical receiving, handling, storage, utilization, and removal per federal (i.e. US EPA, OSHA), state, and local guidelines. The plan provides policies and procedures to reduce the potential for injury and illness to staff, students and visitors as well as protect the school facilities. A plan also includes emergency procedures to initiate in the event of chemical spills and fires which may result in hazardous emissions.

In developing a chemical management plan for a school district, the following organizational responsibilities should be considered. The science department chairperson, and/or chemistry teacher(s) are typically responsible for developing[1] and implementing the "Chemical Management Plan" for the school district including the following [2]:

- Staff and students know and follow all safety rules.
- Students are provided with appropriate safety training.
- Regularly scheduled and documented assessments of the science labs and chemical storage rooms are conducted to identify and correct deficiencies.
- Chemicals are stored in an orderly manner, shelf lives are monitored and aged materials are disposed of in accordance with regulations.
- Incompatible chemicals are segregated to prevent uncontrolled reactions.
- New and current requirements concerning regulated substances are communicated to the staff.
- Science labs and chemical storage rooms are adequately designed and maintained for any material being used or stored.
- Lesson plans are developed and conducted in accordance with the chemical management program. Lesson plans should include all possible hazards, preventive measures, and emergency responses for each hazard.
- Material Safety Data Sheets concerning chemicals used and stored in the school are updated and readily available.
- Establish clearly defined lines of responsibility regarding the implementation of this plan with other departments (i.e. school principals, district operations personnel, teachers, nurses, etc.).
- Provide guidelines to implement in emergency situations. In the event of an emergency (i.e. spill, fire, and toxic emission) protocols can help guide staff through notifying the main office and requesting the assistance of emergency responders.
- Establish procedures regarding emergency evacuation and alerting local emergency response agencies.
- Develop policies to address the removal of hazardous chemicals including how they are collected, segregated, stored and disposed of. The head of buildings and grounds is oftentimes the staff responsible for arranging for chemical disposal following federal and state manifest tracking systems.
- Review and revise the existing plan following state education department, federal/state safety and health agency requirements, as well as US Environmental Protection Agency-Chemical Management Program for Schools guidelines.

This is a sample guideline furnished to you by Glatfelter Brokerage Services to assist you in reducing risk exposure. Review all applicable federal, state and local safety rules and regulations and make the necessary modifications to meet the needs of your organization.

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Chemical Inventory

The Science Department head or designated individual should be responsible for verifying that an inventory of hazardous chemicals in the science lab and chemical storage room is maintained. The inventory should be conducted annually listing the chemicals in the laboratory and chemical storage rooms. Special consideration should be given to those chemicals classified as hazardous by the Department of Transportation (DOT), the Environmental Protection Agency (EPA), or displaying a "2" or greater number in any section of the National Fire Protection Association (NFPA) diamond.

Material Safety Data Sheets (MSDS)

A Material Safety Data Sheet (MSDS) is a document that describes the chemical and physical characteristics of hazardous chemicals, provides information about safety and health hazards associated with its use, and list the means for controlling those hazards. As part of the OSHA Hazard Communication standard, chemical manufacturers provide MSDS's for the chemicals delivered to the school. The MSDS for the chemicals stored in the science laboratories provide the following information:

a. Chemical Product and Company Identification
b. Hazards Identified
c. Composition/Information on Ingredients
d. First Aid Measures
e. Fire Fighting Measures
f. Accidental Release Measures
g. Handling and Storage
h. Exposures, Controls, Personal Protection
i. Physical and Chemical Properties
j. Stability and Reactivity
k. Toxicology Information
l. Ecological Information
m. Transport Information
n. Regulatory Information
o. Other Information (i.e. NFPA Hazardous Material Information System (USA, 29 CFR Part 1910.1200 OSHA MSDS Requirements, 49 CFR Table List of Hazardous Materials)

Chemical Storage

Sufficient quantities of chemicals for only one day's lessons should be available in the chemistry lab or within the laboratory hoods.

Central Stock Room

- Chemical storage should be limited to those products needed to support the curriculum, and quantities should be kept as small as possible.
- Flammable liquids should be stored in Underwriters Laboratories (UL) listed flammable liquid storage cabinets and provided with ventilation according to NFPA 30 (Flammable and Combustible Liquids) standards.
- Acids and alkalis should be stored separately on impervious trays, kept below eye level, and separated from one another and from flammables.
- Chemical storage shelves in the chemical storage rooms should contain a two-inch shelf lip to prevent bottles from rolling off the shelving. These shelves can be made from wood molding or chemical-resistant plastic.

Labeling

Hazardous chemicals that are used in the science laboratory, stored in chemical storage rooms, or removed from the premises and shipped to designated state approved hazardous waste storage sites, should be labeled. Affix labels to chemicals received from manufacturers containing the following information:

- Identity of the hazardous chemical
- Appropriate hazard warnings (i.e. NFPA Hazardous Material Information System (USA, DOT)
- Name and address of the chemical company (i.e., manufacturer)

Waste Removal

The following guidelines should be followed to reduce the potential for harm to staff, students, visitors, and the environment.

- Indiscriminate disposal by pouring waste chemicals down the drain is unacceptable. Hoods are not an acceptable means of disposal for volatile chemicals. Periodically remove waste from science labs and chemical storage rooms.

- A qualified contractor should be used for the disposal of hazardous waste. All applicable statutory and regulatory requirements should be documented.

Special Considerations for Mercury [3]

- Mercury is most commonly found in thermometers and blood pressure machines in the nurse's office, and small containers of mercury may also be found in high school and middle school science labs and chemical storage rooms. The "Chemical Management Plan" should address exposures and controls regarding the use, handling, storage, and removal of mercury.
- Mercury thermometers and blood pressure machines should be replaced with mercury free products if feasible.
- Mercury should be disposed of in accordance with US EPA, applicable state and local environmental requirements.

General Science Laboratory Safety Tips [2, 4]

- Do not touch, taste or smell any reagents or chemicals.
- Exhaust hoods in the science labs should be tested and ventilation maintained, following American Conference of Governmental Industrial Hygienists (ACGIH) requirements.
- Eating, drinking, smoking, chewing gum or applying cosmetics or lip balm in areas where science laboratory chemicals are present should be prohibited.
- Food or beverages should not be stored or handled in laboratory areas.
- Wear appropriate gloves when the potential for contact with chemicals exists. Inspect gloves before use.
- All persons, including visitors, should wear appropriate eye protection (face shields and safety goggles) in areas where chemicals are stored or handled.
- Handle and store laboratory glassware with care to avoid damage; dispose damaged glassware. Use extra care with flasks and other glass apparatus.
- Use equipment only for its designed purpose.
- Wash hands or other exposed area thoroughly before leaving the science laboratory.
- Avoid practical jokes or other behavior that might confuse, startle, or distract another student.
- Confine long hair and loose clothing.
- Prohibit sandals, perforated shoes, or any shoes made of cloth.
- Keep the work area clean and uncluttered. Clean up the work area upon completion of an experiment.
- Use suitable personal protective equipment as indicated in the Material Safety Data Sheets.

Reference Resources:

1, 4 National Institute for Occupational Safety and Health (NIOSH), School Chemistry Laboratory Safety Guide, Publication No. 2007-107, October, 2006

2 New York City Dept. of Education, Office of Occupational Safety and Health, Chemical Hygiene Plan, pg 84-85, September, 2006

3 US EPA, Chemical Management Resource Guide for School Administrators, EPA 747-R-002