

## **Laboratory Safety – Schoolboard Q4**

Laboratory safety in schools is essential to ensure the well-being of students, teachers and staff while conducting experiments and handling chemicals or equipment. Developing and following proper safety practices helps prevent accidents, injuries and exposure to hazardous substances. Creating a safety manual for the lab is a good way to start. Before addressing the parts of the safety manual, consider developing a mission statement. Mission Statements are a great way to show the laboratories commitment to safety for both teachers and students. The mission statement should reflect the beliefs of the laboratory. Keep the mission statement to 2-3 sentences and consider incorporating concepts such as “health and well-being”, “teacher and student safety”, “protecting the environment” and “minimizing injuries and illnesses”.

Once the mission statement is complete, start developing your safety manual and include the following sections:

- 1) Hazard Assessment
- 2) Chemical Physical and Health Hazards
- 3) Safe Handling and Storage
- 4) Proper Use of Equipment
- 5) Emergency Preparedness
- 6) Training Staff

### **Hazard Assessment**

A hazard assessment is a process that identifies hazards, evaluates their risks and investigates ways to manage them. The method includes collecting and reviewing information about the hazards present or likely to be present in the workplace. Hazards come in various forms, so keep an open mind. Laboratory hazards to look for during this assessment period include the dangers of chemicals, improper operation of laboratory equipment, slips, trips and falls, mishandling of broken glass and required personal protective equipment (PPE).

### **Chemical Physical and Health Hazards**

Generate a written list of chemicals used in the lab and obtain the most updated Safety Data Sheets (SDS's) for each. SDS's can be provided by the manufacturer or the supplier and may be found on their website. Review the SDS to identify the physical and health hazards of each chemical. Physical hazards include corrosives, flammables, reactives or oxidizers, while health hazards include irritants, carcinogens, reproductive toxins and sensitizers. Once all hazards have been identified, safe handling and use procedures can be developed.

### **Safe Handling and Storage**

Safe handling and storing of chemicals will help minimize spills, splashes, fires and exposure to airborne contaminants, ultimately minimizing the dangers to staff, students and the department. If there is a potential splash hazard, ensure appropriate PPE is available, such as eye, face, hand and body protection. Review the SDS's to identify the specific type of personal protective equipment used when handling chemicals. Storage cabinets play a key role in keeping the area organized, minimizing spills, preventing exposure to airborne contaminants and reducing the potential for fires. Ensure only compatible chemicals are stored with one another. All lids must be kept tight when the chemical is not in use to prevent airborne exposure. Proper handling of glass items will minimize the risk of breakage and exposure to cuts and scrapes.

### **Proper Use of Equipment**

Create a list of all equipment used in the laboratory, such as Bunsen burners, mixers and metering devices. For each piece of equipment, have the appropriate operator's manual available. Manuals not only list the proper operation of the equipment but also identify safe handling procedures. These manuals are an excellent resource for developing written methods and safety guidelines.

### **Emergency Preparedness**

Preparing before an emergency incident is vital in ensuring a safe workplace. Create a list of potential emergencies that may occur in a laboratory setting, such as fire, chemical spills and injuries and develop appropriate response procedures for each. Accidents do happen, so creating response procedures prior to them occurring will not only minimize the extent of damage but also reaffirm the department's commitment to keeping employees and students safe.

When developing fire procedures, identify the roles and responsibilities of those who would respond and those who would be required to evacuate. Spill procedures should include required PPE, the location and use of spill cleanup kits, cordoned-off areas during cleanup and proper disposal of waste material. Lastly, injuries may occur and immediate response is very important. Members of the first response team should be trained in first aid, CPR and AED.

### **Training**

Training is the final part and one of the most important pieces of laboratory safety. Even the most well-written safety manual is only as good as the training. Train affected staff and students on each applicable part of the safety manual, including hazard assessments, physical and health hazards, safe handling and storage and emergency preparedness. Once initial training is complete, review the program at least annually or whenever there are changes. Those required to respond to emergencies must be equipped with needed supplies, appropriate PPE and understand their responsibilities.

After training:

1. Run drills to test the response program and identify any areas for improvement.
2. Don't forget to document all training classes and drills.
3. If you recognize any deficiencies in the program, update it as needed.

A few final items to consider when establishing a laboratory safety program include proper waste disposal, behavioral expectations from students and a procedure for reviewing the program to incorporate changes such as new chemicals, new equipment or renovation of the laboratory. Consider reviewing the program on an annual basis to see if there are areas in need of improvement.

While these guidelines are not all-inclusive, it is a good place to start in developing your laboratory safety manual. Therefore, it's essential to review them specifically for your school. Consider meeting with other departments to get their input, as they may uncover hazards you did not consider. It's also crucial to regularly review the program with staff so they remain aware and up to date with safe work practices. By involving staff in this process, schools can foster a culture of safety and create a safe and effective learning environment.

If you need help identifying potential hazards in your workplace, please contact Andy Sawan, Risk Services Specialist at Sedgwick at [andrew.sawan@sedgwick.com](mailto:andrew.sawan@sedgwick.com) or 330-819-4728.