Safety and Health in the Technical Classroom and Laboratory: Part 2

By Charles E. Backes and Corey M. Nawolski

One of the most critical roles of a technical instructor is to ensure that the classroom or laboratory is safe, clean and free of hazards. For an institution of learning, the safety of everyone who enters and works in the classroom and laboratory must be the first priority.

In the first part of this series, which appeared in the February 2013 issue of *Techniques*, the authors discussed the need for providing a safe and healthy learning environment in career and technical programs, and introduced a model for ensuring that this type of environment exists. The critical core component of awareness was introduced, as well as instruction, and testing and evaluation. This article will continue with a discussion of the remaining components of the model (Figure 1).

Facility Assessment

One of the most critical roles of a technical instructor is to ensure that the classroom or laboratory is safe, clean and free of hazards. For an institution of learning, the safety of everyone who enters and works in the classroom and laboratory must be the first priority. Clutter, damaged equipment, blocked walkways and exits, and other inherent safety hazards must be eliminated.

Familiarity and habit can be big obstacles to a safe facility, but they can also be a means to incorporate safety and to maintain a safe and obstacle-free laboratory. Teachers and students may step over clutter and dodge hazards for hours on end without consciously being aware of the hazard. Pipe and lumber extending into aisles, extension cords hanging too low and exposed sharp objects are only a few of the examples that illustrate this phenomena. A slight change in direction or alignment, a distraction or an unfamiliar student is often all it takes to go from a potential hazard to cause an accident or injury. Moreover, these items may pose a greater threat when an emergency evacuation is necessary.

Facility assessment should be a continuous process, but simply looking for hazards may not be enough. Frequent and systematic facility assessments are necessary. An excellent resource is the National Institute for Occupational Safety and Health (NIOSH) Safety Checklist Program. This program contains a wealth of information, including safety checklists tailored specifically to the subject area being taught. Examples of these areas include agricultural education, business education, health occupations education, engineering-related technologies, marketing education, home economics-related education, trade and industrial education, and other career-technical areas. In addition, specific trade areas are listed as references to access the appropriate facility checklists. The NIOSH Safety Checklist Program may be accessed at **www.cdc.gov/niosh/docs/2004-101/chap4.html**. Other checklists may be provided by various governmental agencies and industry-certification organizations.

The actual assessment of the facility can be an excellent learning opportunity for students. By using resources such as the NIOSH Safety Checklist Program, students are taught to research and iden-

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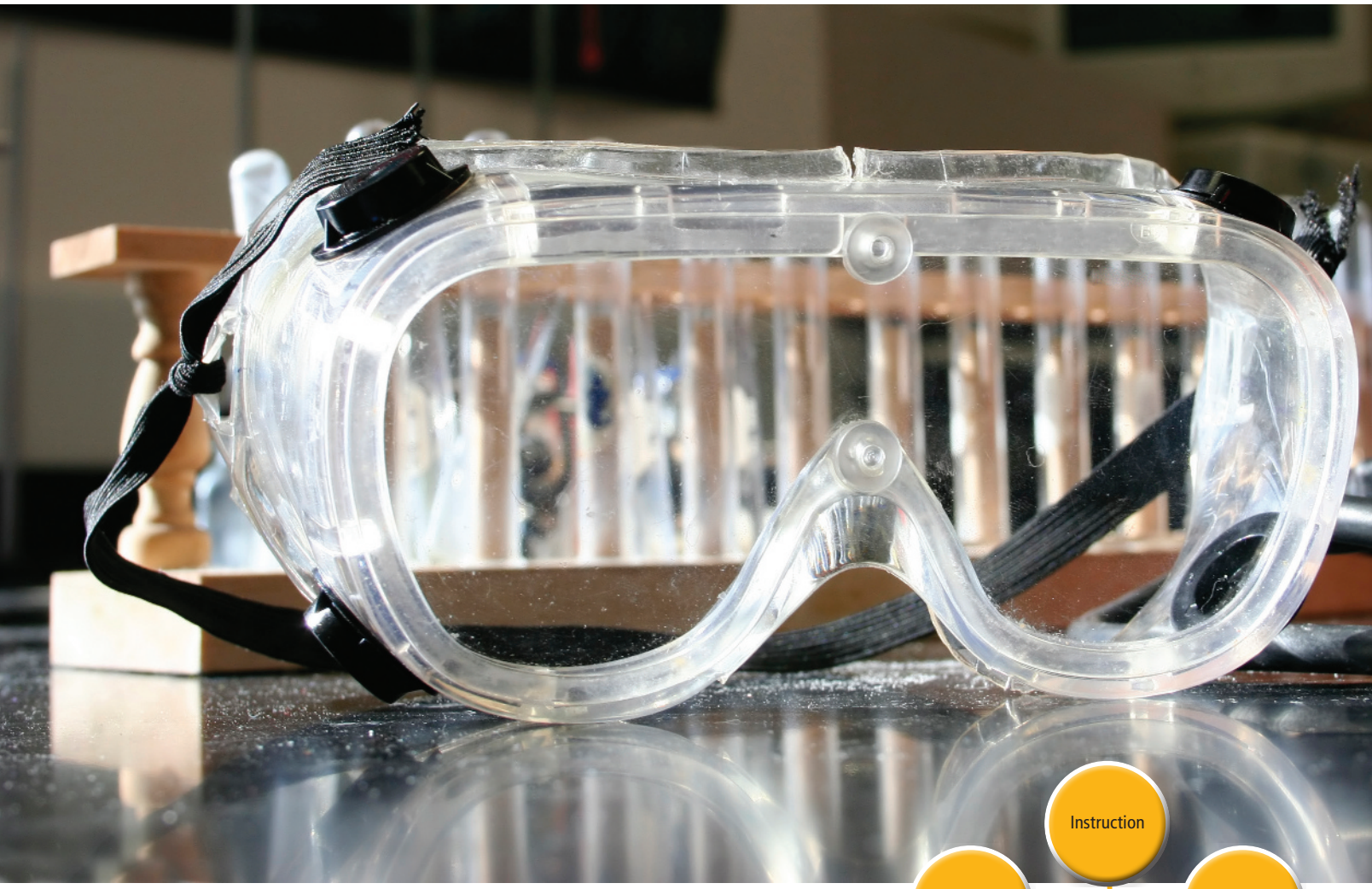

tify appropriate checklists and to apply them in the actual laboratory setting. Under the guidance of the instructor or industry partners, students can work individually or in small groups to conduct inspections and compare the results with that of the instructor or trained inspector. Students can learn to prioritize needs and formulate strategies for correcting deficiencies. Hazards or deficiencies that are within the skill level of the students can be addressed by the students themselves, often leading to higher levels of student learning and ownership in the classroom and laboratory facilities. A written report of the results of the assessment and corrective actions can be developed by the students, with an oral presentation given to the class, instructor or administrator. Each of these activities may be effective strategies for strengthening the students' communication skills. Moreover, instructors may face temporary situations, like a minor injury, that prohibits a student's active participation in lab activities. Conducting safety inspections is a productive use of a student's time, and it provides a valuable service to the program.

Finally, it may be beneficial to have the program's advisory committee/business and industry council use the checklists. These industry representatives may reveal unseen hazards within a laboratory and may be able to sway the program's administration to act on safety concerns that have been "put on the back burner."

Figure 1: Backes and Nawolski Safety and Health Model

Modeling

It is no secret that students keep a close eye on the actions of the teacher. In fact, sometimes it seems as though students watch the teacher closer than the teacher watches the students! The teacher is the

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primary role model who must exhibit safe work practices at all times. Haynie points out that "A student who learns from direct instruction that safety glasses must always be worn quickly 'unlearns' that information if she looks in the lab window after school to see the technology teacher drilling a few holes with the hand drill while not wearing eye protection." Consistency is the key. The teacher must exhibit a genuine, constant adherence to safe work practices, including the use of personal protective equipment (PPE) at all times. This includes class time, as well as between and after classes.

Visitors to the lab area should be made aware of safety practices and procedures verbally and by signage posted at the entrances to the laboratory. PPE needs to be easily accessible and must be used by anyone who enters the restricted area, including administrators, parents, maintenance personnel and other visitors. A strong but mixed message is sent when students observe the school principal walking around the laboratory without proper safety equipment. It is recommended that clean safety glasses are set aside for visitors who enter the work area. Students in the class should be trained to work with the teacher to greet visitors with proper safety equipment and advice. After all, no instructor wants to fill out accident reports for themselves, students or VIPs! Safe working practices are intended for everyone.

Follow-up and Monitoring

Safety instruction, procedures and facility assessment are only the beginning of an effective system. Constant vigilance is critical to ensure that the environment remains safe and that proper practices are followed. Students will require frequent reminders. These reminders may come in the form of briefings, safety posters or follow-up assessments. Creative strategies to provide reminders can add to the effectiveness of the safety program. Catchy phrases and slogans, signs and banners can be attention getters that reinforce the safety program. As an example, one teacher hung a light-weight placard at eye level that read, "Safety glasses required past this point!" in the entry way leading into the laboratory. The cabinet holding the safety glasses was placed near the sign. Entrants to the area had to duck under the sign or move it out of the way to enter the lab. The practice soon evolved into a routine of tapping the sign and taking a pair of safety glasses one student after the other, much like a sports team that slaps the door frame as it enters the field. No one passed the sign without a pair of glasses. The initial idea was to gently remind the students to put on safety glasses, but it became something much more effective and meaningful. Of course, there was no guarantee that the safety glasses would stay over the students' eyes, so the teacher still had to constantly look for stray violations.

Intervention and Consequences

If the provision of a safe working environment and a zero-incidence safety record is the goal, then enforcement is the key. Sometimes, intervention and consequences are required. Intervention must be swift and well planned. In the case of imminent danger, immediate action, such as shutting down equipment or even evacuation, may be required. In other cases, intervention may be a bit less drastic, but it is still critical to ensure the safety of individuals in the area.

In spite of a teacher's best efforts, sometimes violations occur. In the most serious cases, a student may need to be limited or even removed from the laboratory environment for his or her own safety, as well as for the safety of others. Documentation is critical, as is a strong working relationship with parents and administrators. Students and others should be made aware of the consequences for misbehavior and for repeated safety violations. Severity of the consequences should match the severity of the violation. Safe working practices offer numerous opportunities for learning, but the environment must be controlled so that injuries do not occur.

On a positive note, consequences for

proper and safe work practices can be very effective. Industry often rewards employees for meeting safety goals through the use of banquets, awards, prizes and other incentives. Some are as elaborate as vacations, while others are as simple as stickers for safety helmets. In the classroom and laboratory, teachers can use similar strategies, with incentives that are appropriate and affordable for use in educational settings. A positive comment sent to a parent, a few bonus points on a safety quiz or a cool pair of safety glasses may be all it takes to motivate a student. A pizza party may be even better!

Getting It Right

The goal of every instructor must be to provide a safe and healthy learning environment. Every instructor knows that many young adults believe that accidents will never happen to them. Many instructors have a solid program in place that will keep their students safe; however, most safety programs can be improved upon. This model seeks to ensure that all individuals are safe in the hands-on learning environment. Instructors are urged to incorporate the model or to insert missing components into existing safety programs to fill any gaps that may lead to accidents or critical incidents.

Certainly, there is agreement that the students within your classes deserve to learn in a safe and controlled environment. Some instructors believe that it is impossible to prevent all accidents, and they might be right. What is possible is the ability to implement a plan designed to eliminate or limit all or most of the risks presented to students and others in the laboratory. Just as an instructor expects a loaned tool to be returned in the condition it was borrowed in, parents expect their children to return home just as they were when they left home—completely intact and free of dings and dents! T

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