TECHNOLOGY EDUCATION SAFETY GUIDE

Developed by the Lenape Regional High School District Safety Committee

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INTRODUCTION

The safety and health of all individuals participating in technology education activities are vital concerns and continuing challenges. The shop and laboratory learning environment can expose participants to situations that are potentially threatening to their safety and health.

This guide is not intended to be a complete and all-inclusive safety instruction or safety program text. Its aim is to draw attention to the necessity for planned safety instruction. The guide may provide direction and resources to upgrade and improve safety instruction in the shop and classrooms.

Objectives of a Technology Safety Education Program

Suggested objectives of a typical technology safety education program are as follows:

1. Develop a positive attitude in teachers and students towards safety in the shop.
2. Establish and adhere to general safety standards and practices.
3. Establish uniform machine and equipment safety instructions.
4. Supply the student with sufficient information and instruction on safety procedures on the various pieces of equipment.
5. Develop and maintain a safety inspection plan for facilities.
6. Develop and execute a plan to alleviate unsafe conditions over which there is control.
7. Establish and maintain an accident reporting system compatible with State Department of Education requirements.
8. Make parents aware of the importance of safety, and the gravity of safety infractions.
9. Create and administer a standard written and performance safety test for each machine operation.
10. Develop a consciousness in all participants of wearing specific protection gear as required in designated shop areas.
11. Develop an awareness of lighting, ventilation, traffic flow, and other general physical conditions of a work area that affect the safety of students or teachers.
12. Develop a student routine of proper housekeeping (including the orderly arrangement of tools, equipment, storage facilities, and materials) before, during, and after a work session.

13. Develop the ability to recognize potential hazards and take appropriate measures to avoid or eliminate them.
14. Develop corrective procedures for infractions of the safety education program.
15. Post Safety signage posted in close proximity to each machine.
16. Provide maintenance logs for maintenance/repair to any machine will be available.

Teachers' Responsibilities

Teachers are the key to a successful comprehensive safety program. They develop positive safety attitudes and awareness towards unsafe working conditions or practices. Teachers are the persons responsible for putting innovative safe programs into practice. They set the immediate example for the students to follow. The major responsibility for laboratory safety instruction in accident prevention falls on them. The following functions are considered to be the responsibilities of teachers in a comprehensive safety program:

1. When shop is not in use, power **must** be shut off. All circuit panels are to remain locked. Classroom doors shall be locked. All keys shall be kept with the teacher at all times.
2. Incorporate safety instruction into the course of study. Maintain documentation as to when instruction was given and which students received the instruction.
3. Present and document instruction on potential hazards and accident prevention specific to the particular school facility.
4. Initiate a comprehensive safety program for a particular school facility.
5. Develop specific safety practices and regulations relating to facilities. Provide for the enforcement of those practices and regulations.
6. Keep informed of new and accepted safety practices for accident prevention.
7. Set a proper safety example for students to follow (a role model).
8. Require that adequate eye protection devices be worn in all technology education laboratories at all times.
9. Require that proper protective equipment (clothing, guards, etc.) be used in all laboratory areas.
10. Establish and enforce safe housekeeping procedures.
11. Require that guards meeting accepted standards be provided and used whenever a machine is operated.
12. Establish preplanned procedures in case an accident or emergency occurs.
13. Provide for the supervision of students in the classroom/laboratory in accordance with legal requirements. Note: Instructor is not to leave the classroom unsupervised at any time when students are present!

14. Provide input in development of Individualized Education Program (IEP's) for classified students, placing special emphasis on unique safety considerations!
15. Regularly review laboratory facilities to maintain safe conditions, giving special attention to: keep aisles clean, equipment safety guarding, storage and condition of tools, storage/labeling/handling of flammable, combustible, or potentially hazardous materials, and personal safety equipment and practices.
16. Make recommendations to department coordinator/supervisor for improving safety conditions.
17. Carry out recommendations of administration for improving safety instruction.
18. Monthly safety checks by teacher will be logged and reviewed by supervisor quarterly.
19. Records of students' safety and equipment tests will be kept on file.
20. Ensure sharpness of all cutting tools.

Parents'/Guardians' Responsibilities

Developing positive safety attitudes in students cannot be accomplished by a school safety education program, and the classroom instructors' efforts alone. Parents/guardians, as responsible community members, have vital roles in the establishment of safety awareness in their children. The following functions are considered to be the responsibilities of parents/guardians in the overall safety education program:

1. Reinforce safety concepts at home.
2. Teach home safety standards to children in the home.
3. Support the school's comprehensive safety education program.
4. Provide the student with the proper clothing to function safely in the school environment.
5. Support the need for adequate safe equipment and supplies.
6. Impress upon the student the importance of thinking safety, talking safety, and practicing safety.

Students' Responsibilities

A prime purpose of any school safety program is to protect the students from accidents. They are the catalysts to a successful school safety education program. The following student responsibilities must be established to maintain an effective safety education program:

1. Comply at all times to the safety regulations.
2. Develop a safety awareness attitude.
3. Report all injuries to the teacher immediately.
4. Operate any machine only after both the written and performance safety tests are completed successfully with an 80% or better.
5. Understand and apply the safe operation instructions to all machines.
6. Adhere to teacher's instructions at all times.
7. Always wear proper clothing.
8. Inform the instructor of all unsafe conditions immediately.

Health Services' Responsibilities

An important phase of a successful safety program is a sound emergency procedure. The dissemination of information on first aid and emergency procedures falls to the Health Services Department. The following are the responsibilities of Health Services to maintain a successful safety program:

1. Establish a vocational education first aid emergency procedure.
2. Maintain district accident records.
3. Carry out accident investigations.
4. Participate in safety committee and annual school safety inspection activities.
5. Participate in safety training for school personnel.
6. Submit required accident report forms as mandated by state regulations.

EMERGENCY PROCEDURES

An important phase of a successful safety program is a sound emergency procedure. Emergency situations can arise at any time in the technology education laboratories. When an injury occurs, there are two aspects of emergency procedures that must be considered.

The first concern is the action that should immediately take place following an injury *(Primary Concerns)*. The second concern is the action that should be taken after the confusion has subsided and the injured party has been treated *(Secondary Concerns)*. In both of these phases, Health Services (medical officer, school nurse, etc.) plays an important part. The following information is provided to serve as an emergency action plan for the teacher, student, and administration to follow.

Primary Concerns

A. Suggested emergency procedures to be followed in case an accident occurs involving a student:

1. Immediately cut off the power.
2. Determine the extent and type of injury and simultaneously call for the school nurse.
3. Disperse the crowd. Keep the injured person and surrounding area as quiet as possible.
4. Notify the department supervisor (AP) and or principal (via student messenger, for example). Do not leave the injured person alone.
5. If the injury is minor (splinter, slight cut), send the student to the school nurse accompanied by another student. An injured student should not be sent to the nurse alone.
6. If a foreign particle has entered the eye, send an accompanying student with the injured student to the school nurse. A teacher should never attempt to remove an object from a student's eye. If a liquid has entered the eye, (acid, etc.), immediately wash the eye in an eye wash station and contact the nurse.
7. At the conclusion of emergency care, the proper accident report forms should be completed according to an established school safety education requirement.
8. Use proper Personal Protective Equipment and exercise universal precautions – gloves, clean rags, or bandages – when blood exposures are involved.

B. It is recommended that during the first week of class the students be oriented in safety instruction (including procedures to be followed in the event of a teacher injury). Suggested emergency procedures to be followed in case an accident/injury occurs involving a teacher are as follows:

1. At first warning of an injury involving a teacher, all students should cease activities and report to the teacher's desk area and await instructions.
2. If a teacher has an accident/injury, the student should pursue the established procedure:
    - One student informs the nearest teacher as to what happened. That teacher will cease all student activity in his/her area and ask a neighboring teacher to cover both classes before reporting to the injured teacher's class.
    - While the above is being done, another student informs the nurse.

- Another student informs the department supervisor (AP) or the principal.

3. The student should abide by all instructions from the first staff member arriving on the scene.
4. The first staff member on the scene:
    - Directs students to report to a holding area with supervision.
    - Comforts and assists injured teacher as nature of injury dictates until medical help arrives.
    - If nurse arrives before an administrator, the teacher remains on the scene.
    - When the department supervisor (AP) or other administrative member arrives, the teacher returns to his/her class.
5. The department supervisor (AP):
    - Makes arrangements with the administration to provide supervision of the assigned students for as many periods as it will take to handle the emergency and to carry out fact-gathering procedures.
    - Obtains information about the accident from injured teacher.
    - Keeps laboratory closed for appropriate time period.
    - If equipment is involved, ascertains that equipment is placed "out of service".
    - Prepares report as per school and state policy.

Role of Substitutes

Due to the variety of equipment and supplies for which a laboratory teacher is responsible, it is essential to consider the role of a substitute teacher.

Consideration should first be given to the amount of time that the regular teacher will be absent. The next consideration is whether the substitute teacher is or is not certified in that laboratory instructional area.

At no time should a non-certified substitute be permitted to instruct or permit students to work in the laboratory.

If the substitute is certified to teach in that subject, the following actions may be taken:

1. *Brief absence* – If the regular teacher is on a brief absence, it is recommended that the substitute not hold class in the laboratory. The regular teacher should leave alternate plans, which can be carried out in a regular classroom (not in the laboratory area).

2. *Extended absence* – If the regular teacher will be absent for a long duration, it is recommended that a substitute may teach and conduct class in the laboratory after (a) the administration gives approval, and (b) the department supervisor (AP) or principal reviews the situation with the substitute and is satisfied that the substitute is knowledgeable of that area and its related equipment.

Note: If a substitute is allowed to teach in the laboratory, it is strongly recommended that constant supervision be provided by the department supervisor (AP), and/or administration.

School Accident Reporting
When any technology education laboratory accident occurs, it must be reported to the school nurse.

Refer to sample of accident report.

TECHNOLOGY SAFETY EDUCATION POLICY

Foreword
It is a recognized fact that school shop laboratories can be potentially dangerous places in which to work. A properly equipped, arranged, maintained, and managed facility can provide a safe environment, thereby reducing the element of danger. Technology teachers have the responsibility of maintaining a diversity of equipment for safe and productive operation.

Accidents can be prevented through an effective safety program. A program that thinks safety, talks safety and practices safety cannot help but succeed. Safety must be an ongoing program if it is to be effective. This section will provide the policies needed to insure consistency and continuity of a safety program.

Essential Elements of a Safety Education Program

The components of an effective safety program are:

1. General and specific machine safety instruction must be established and made available to the students at all times.
2. Evidence must be established that proves that each student received safety instructions and been tested to ascertain student's knowledge of safety.
3. The written examination to ascertain the student's knowledge of safety should be documented with the date and student's signature.

4. The teacher must demonstrate to all students the proper and safe operation of all shop machinery and record the instruction date in the plan book, or grade book.
5. Each student must demonstrate to the teacher the ability to use shop machinery safely, with the date of the demonstration recorded.
6. All tests and other forms of evidence of safety instructions should be kept on file as long as the student is enrolled in school.
7. All reports or other evidence of an accident should be kept in a safe place on school property to be available in case of future litigation.
8. Attendance records must be maintained.

Avoiding Accidents

Teachers should constantly address the subject of negligence, not only as an obligation to themselves, but as an obligation to protect the students in their care. A few recommendations for avoiding negligent practices are as follows:

1. Supervise students to prevent them from causing injury to themselves or from causing injury to others.
2. Instruct students in proper manner of conducting inherently dangerous activities. Emphasize and periodically review all safety procedures.
3. Warn students of the specific dangers inherent in each shop/classroom activity.
4. Keep machinery in proper working order, especially the safety devices. If any equipment/power tool blows a breaker or has to be "reset," it should be taken out of service and supervisor and maintenance notified immediately. This item should be tagged as unsafe, and a plug lock should be installed on it.
5. Never leave the shop while students are working in the shop.
6. Do not permit substitute teachers to teach in a shop unless they are certified in that subject.
7. Permit only those students who have participated in the shop program, or who are participating, to use the shop and equipment therein.
8. Do not take the word of students that they have had previous instruction on the tools, or have had experience in their usage.
9. Make sure that proper instruction is given for each basic operation to be performed by a student in the shop class.
10. Permit no student to use a machine or tool in performing an operation for which instruction has not been given.
11. Only tools provided by the school are permitted for student use in the shop.
12. Allow no student to bring in any item of equipment for use in the shop.

13. Permit students to use equipment and to work in the shop during designated periods when proper supervision is given.
14. Be familiar with work habits of students and with those who possess physical needs, which may necessitate modifications regarding their use of equipment.
15. Make every possible effort to provide the safest physical facilities, and implement an effective safety instructional program.

SAFETY RULES

General Safety Rules

A. Technology Education Laboratory Rules

1. Safety glasses equipped with side shields or goggles shall be worn in all laboratory classes. Additional eye and/or face protection must be worn when working around certain specified machinery or when performing special operations. Ear protection must be available and worn when operating equipment.
2. No smoking is allowed on school property.
3. No food or beverages are allowed in any laboratory or classroom.
4. Long hair is to be tied back or netted when wearer is working in the laboratory.
5. Rings or other jewelry must be removed before working in all laboratories.
6. Any loose clothing is to be removed or fastened. Long sleeves are to be rolled above the elbows.
7. Sandals or open-toe shoes are not to be worn in the laboratories.
8. No tool or machine is to be used until student has received instructions and has learned its safe and proper use.
9. All sharp-pointed objects are to be carried with the point down. Materials with sharp and/or jagged edges are to be handles with care.
10. Help is to be sought for handling heavy or awkward materials. Lift with the leg muscles, not the back.
11. Notify teacher and immediately wipe up any liquids that are spilled on the floor.
12. Oily rags and other combustible materials should be placed in approved metal containers.
13. Tools or machines are not to be used in the laboratory if the instructor is not present.
14. All broken tools, machines, or other unsafe conditions must be reported to the instructor immediately.

15. Anyone operating a machine is not to be disturbed.
16. All injuries, however slight, are to be reported to the instructor immediately.
17. Floor and work surfaces are to be kept clear of scraps and litter.
18. Machines that have been tagged *"defective"* are not to be operated.
19. All drawers, cabinet doors, vises, etc. should be closed when not in use.
20. No one shall engage in horseplay or create a disturbance in the laboratory area.
21. It is essential that all students know (a) the location of all emergency switches, (b) the fire drill procedures, and (c) the emergency procedures in the event of an accident.

B. Hand Tool Care and Use

1. Tools should be stored in cabinets or in a tool rack when not in use.
2. Keep edged tools, such as chisels, with edges covered flat in a drawer or tray rather than in wall racks.
3. Tools should be kept in good condition. Dull or damaged tools contribute to many accidents and injuries.
4. Suitable handles (plastic or wood) should be attached securely enough to the head of each tool that requires a handle to keep it from flying off.
5. Blades of cutting tools must be kept sharp and properly angled.

C. General Hand Tool Safety Rules

1. Keep hand tools locked up
2. Adequate eye protective devices must be worn at all times.
3. The correct tool should be selected for the job.
4. Hands should be kept free of oil and grease.
5. Sharp-edged and pointed tools should be handled with care. Carry tools in such a way to protect self and others.
6. Small or short objects should be held securely in a vise or clamp.
7. Tools are never to be carried in the pockets.
8. Tools with loose or cracked handles are not to be used.
9. Clean the tool and return it to the proper storage area when finished using it.
10. Tools are only to be used for the purpose for which they were intended.
11. Any breakage or malfunctions are to be reported to the instructor immediately.
12. Lumber shall be stacked in such a way to avoid open voids. Height shall be 2 feet from building structure.

13. Shop tools are to remain in the shop at all times.

D. General Power Equipment Safety Rules

1. Obtain instructor's approval before operation any power equipment.
2. Always wear proper ear and eye protective devices.
3. Remove jewelry, eliminate loose clothing and confine long hair.
4. Never operate a machine if over-tired or ill.
5. Operations should be planned before being performed.
6. Make all the necessary adjustments before turning on the power.
7. Make sure all guards are in place and functioning properly.
8. Allow the machine to reach its full operation speed before starting to feed the work.
9. Only approved push sticks, push blocks, and feather-boards should be used.
10. Keep machine tables and working surfaces clear of tools, stock, and other project materials.
11. Feed the stock carefully and only as fast as the machine will cut it easily.
12. Hands should be kept a minimum distance of 4" from the cutting tool.
13. If a machine is not working properly, the instructor should be informed immediately.
14. Remain focused when using equipment and avoid distraction.
15. Avoid "walking through" or "crowding around" areas where machines are being operated by other students.
16. Machines should never be left running while unattended.
17. Machines should be used for intended purposes.
18. A small brush should be used to clean machines after operations are completed.
19. When oiling or adjusting a machine, be sure the power switch is "off".
20. Adequate machine use zones must be kept clear at all times.
21. Limit use of extension cords with ground prongs intact. Damaged or cut cords should be taken out of service.

Date _____

Dear Parent/Guardian:

_____ is currently enrolled in a technology education course that may involve working with machinery and equipment.

For the student's protection, we teach the necessary fundamentals of safe procedures in this area of study in order to prevent any possible accidents. The students receive an explanation and demonstration of safe procedures, and must pass a written examination of these procedures to further insure their complete learning of safety prior to using laboratory equipment.

Students have been told they must inform the teacher of any injury, regardless of how slight, at the time of injury.

Our shop laboratories are modern and equipped with high-quality equipment that requires the utmost caution at all times. Please sign and return the section below to signify that you are aware of safety rules.

Thank you,

Technology Education Teacher

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This is to indicate that I am aware that my child is expected to adhere to the prescribed rules of safety while in the technology classroom and laboratory. He/she has been instructed as to the possible consequences of infractions. Furthermore, I realize that my child is subject to disciplinary action for failure to comply with these rules, which could possibly include dismissal from class.

_____ _____

Parent/Guardian Signature Date