

# TECHNOLOGICAL EDUCATION SAFETY

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## Technological Education Safety Procedure

### **Acknowledgement to:**

Teaching & Learning: Experiential Learning Team

Occupational Health & Safety Department

Technological Education Safety Committee

Safety in the Classroom Committee

### **Reviewed by:**

Academic Council, December 2011

### **Approved by:**

Administrative Council, January 2012

This document will be reviewed on a three-year cycle or as needed.

This document is available at:

TDSBweb > [teaching & learning > experiential learning > technological education > safety documents](#)

AND

TDSBweb > [employee services > health and safety > your guides](#)

AND

TDSBweb > [academic workspace > experiential learning > documents > safety](#)



## Technological Education Safety Procedure

Technological Education Safety Procedures have been developed to assist Principals, Curriculum Leaders, and Technological Education Teachers to provide a safe learning environment for students, teachers, employees, and visitors.

The procedures outlined in this document will serve as a basis for establishing Safety Procedures in all TDSB schools delivering Technological Education.

Specific safety documents are developed that outline tools, machines, and safety procedures in the following curricular areas:

- Construction
- Dental Health Care
- Green Industries
- Hairstyling and Aesthetics
- Health Care
- Hospitality
- Manufacturing
- Transportation

These documents are designed with teacher-ready materials and serve as the basis for safety instruction.

Principals are asked to review and circulate this document to all Technological Education teaching staff, the Administration team, and Caretakers for implementation.

# Technological Education Safety Procedures

## **1.0 RESPONSIBILITIES FOR SAFETY**

- 1.1 Administration
- 1.2 Curriculum Leader/Assistant Curriculum Leader
- 1.3 Technology Teacher
- 1.4 Students
- 1.5 Board Facilities
- 1.6 Custodian/Maintenance

## **2.0 TECHNOLOGICAL EDUCATION SAFETY PROCEDURES**

- 2.1 Housekeeping Standard
- 2.2 Eye Protection
- 2.3 Chemical Safety, Hazardous Materials, and Flammable Liquids
- 2.4 Protective Clothing
- 2.5 Footwear
- 2.6 Hair, Jewellery, Clothing, and Loose Items
- 2.7 Main Shop Electrical Control Panel
- 2.8 Machine Guards

# Technological Education Safety Procedures

## 1.0 RESPONSIBILITIES FOR SAFETY

### 1.1 ADMINISTRATION

The responsibility rests with the Principal or his or her designate to ensure that each Technological Education Teacher has received the information and instruction on the safe use of equipment in the classroom. Additional support may be requested through the Program Coordinator, Experiential Learning.

In order to achieve safety goals the School Board, Superintendents and Principals should:

- establish and maintain a written Board safety policy and program
- emphasize and enforce the safety policy and procedures
- ensure that each Teacher has been satisfactorily trained on the use of equipment within the classroom (e.g., use of automotive hoists – the Teacher should have adequate ALI training)
- ensure in-service education sessions are held for Teachers concerning the safety policy and procedures therein, such as machine guarding, lock-out, fire prevention, first aid, personal protective equipment
- be aware of current legal issues about liability for classroom accidents; ensure that such is part of in-service sessions for staff
- assist and encourage the teacher to correct and avoid situations that could result in liability to the Teacher and the school
- provide for proper safety equipment in all technology areas
- hold staff accountable for safety practices in their respective areas
- analyze accident records in order to determine the most frequent causes of accidents and the more severe types of accidents
- take corrective measures to change accident-causing conditions
- ensure that staff health and safety training and information is current
- make safety literature, posters, and safety promotional material available to all persons associated with the technology program

- set up a program for the safety orientation for new staff
- ensure that all Occasional Teachers working in the Technology areas are informed about and understand the standard accident and emergency procedures
- not permit the overcrowding of classes, taking into account the physical size of a room, the arrangement of the equipment, furniture and facilities in the room, and the kind of activities that are being carried out in the room
- ensure that the use of space has not changed unless changes have been designed by a qualified architect or engineer
- at the beginning of the year/semester, make the Technological Education Teacher aware of any student medical condition that could result in a safety problem
- ensure that individuals are designated to be responsible for safety in the Technology Department
- limit after-hours access to the Technological Education facilities and equipment to qualified personnel

## **1.2 CURRICULUM LEADER/ASSISTANT CURRICULUM LEADER (CL/ACL)**

The CL/ACL is the intermediary between the individual Teacher and Administration. Each CL/ACL is accountable to his or her Principal to ensure input into the administrative process and enforcement of both the *Occupational Health and Safety Act* and Board policies.

The CL/ACL should:

- ensure that each Technology area has a floor plan posted in a strategic place to show the locations of items such as:
  - ✓ fire extinguishers
  - ✓ fire blankets
  - ✓ emergency power stop buttons
  - ✓ emergency kit
  - ✓ eyewash station(s)
  - ✓ emergency exits
  - ✓ special shut-off valves (gas, etc.)
  - ✓ nearest fire pull station
- ensure that a first-aid kit is available in each Technology area
- ensure implementation and understanding of the safety policies and procedures. This includes developing specific departmental safety procedures or rules for specific areas.

- ensure a designated Teacher is responsible for specific areas of safety in his or her specific areas
- inform the Principal when the physical condition or other factors in the classroom may detrimentally affect safe instruction
- when a program is disbanded, ensure equipment is locked-out and room is not accessible (rekeyed)
- inform the Principal, in writing, of any known or potential safety hazard
- incorporate, in some form, the Live Safe! Work Smart! Program into the various course curricula
- encourage the use of safety posters, literature, and audiovisual aids
- advise the Technological Education staff to ensure that all student projects are able to be completed with safety guards in place. Keep safety guard and anti-kickback devices in position, if possible. Use approved alternate safety devices where appropriate.
- advise Teachers to ensure that safety guards are placed back immediately when process is finished
- where applicable, ensure that there is an appropriate spill kit and spill procedure present
- develop, implement, and post a standard accident emergency procedure in each Technology area
- ensure that current inventories of Material Safety Data Sheets (MSDSs) are maintained
- ensure that no unapproved or unsafe equipment, materials, or procedures are used in the area. Equipment should be purchased through TDSB-approved vendors.
- advise Technology staff that any equipment deemed not to be safe must be taken out of service immediately, tagged, locked out, and reported to the Principal
- advise the Technological Education staff to ensure that no practical shop work requiring the use of tools shall take place during their absence or when an unqualified Teacher in Technological Education is supervising the class
- advise any certified Occasional Technological Education Teacher working in a specific subject area not to engage in practical work until familiar with the shop environment
- encourage the Technology staff to receive first-aid training
- ensure that all accidents and incidents are recorded and reported on the appropriate forms

- conduct, along with the Health and Safety representative where appropriate, a follow-up analysis of all accidents and incidents
- notify the Chief Custodian, Facility Services of any special needs or deficiencies in the area
- review, at least annually, all procedures and rules

### **1.3 TECHNOLOGY TEACHER**

In order to provide a safe environment for students involved in any Technological Education course, the following procedures must be adhered to:

Teachers must be aware of the TDSB Safety Documents that outline safety procedures for machinery, tools, equipment, and procedures by completing the Awareness Training on Key to Learn.

Use of the TDSB Safety Documents is required as the minimum basis for safety instruction. Enhancements and additions to these documents are permitted to meet program needs.

Students and employees must receive instructions on the safe and proper operating procedures for specific machinery and equipment by a qualified Technological Education Teacher before permission is given to use tools, machinery, and equipment. The following excerpt from the Ontario Curriculum document for Technological Education explains this point further:

#### ***Health and Safety in Technological Education***

*Health and safety is of paramount importance in technological education. In every course, students must be made aware that health and safety is everyone's responsibility – at home, at school, and in the workplace. Before using any piece of equipment or any tool, students must be able to demonstrate knowledge of how the equipment or tool works and of the procedures they must follow to ensure its safe use. Personal protective gear must be worn as required.*

*Classroom practice and all aspects of the learning environment must comply with relevant municipal, provincial, or federal health and safety legislation, including the following:*

- *the Ontario Workplace Safety and Insurance Act*
- *the Workplace Hazardous Materials Information System (WHMIS)*
- *the Food and Drugs Act*
- *the Ontario Health Protection and Promotion Act*
- *the Ontario Building Code*
- *the Occupational Health and Safety Act*
- *local by-laws*

*Teachers should make use of all available and relevant resources to make students sufficiently aware of the importance of health and safety. These resources include:*

- *Live Safe! Work Smart! – website and related resources*
- *Passport to Safety – website and related resources*
- *Workplace Safety and Insurance Board (WSIB)*



- *Industrial Accident Prevention Association (IAPA)*
- *Ontario Ministry of Labour (MOL)*
- *Canadian Centre for Occupational Health and Safety (CCOHS)*
- *appropriate Safe Workplace Associations (SWAs) and clinics, such as the Construction Safety Association of Ontario (CSAO), the Ontario Service Safety Alliance (OSSA), the Transportation Health and Safety Association of Ontario (THSAO), the Electrical & Utilities Safety Association (E&USA), the Workers Health & Safety Centre (WHSC), and the Occupational Health Clinics for Ontario Workers (OHCOW)*

*Teachers are responsible for ensuring the safety of students during technology lab, shop, and classroom activities. Health and safety issues must also be addressed when learning involves cooperative education and other workplace experiences (see p. 43). Teachers need to encourage and motivate students to assume responsibility for their own safety and the safety of others, and they must help students develop the knowledge and skills needed for safe participation in all technology-related activities. For these reasons, teachers must model safe practices at all times and communicate safety expectations to students in accordance with school board policies and procedures, Ministry of Education policies, and Ministry of Labour regulations.*

To carry out their responsibilities with regard to safety, it is important not only that teachers have concern for their own safety and that of their students, but also that they have:

- the knowledge necessary to use the materials, tools, and procedures involved in science and technology safely
- the skills needed to perform tasks efficiently and safely

**Note:** Teachers supervising students using power equipment such as drills, sanders, and saws need to have *specialized* training in handling such tools.

Teachers of Technological Education courses must carefully maintain records of student attendance and records of safety instruction given.

Teachers are expected to be able to provide documentation:

1. that the student was present on the date each safety lesson was taught (dated lesson plans, attendance records clear and unambiguous)
2. of the safety lesson that was delivered (e.g., PowerPoint, note taking, signed safety pledge, pre-printed sheets, successful passing on an announced written test that is dated and stored by the teacher, correction of errors completed)
3. that indicates student understanding of the safety lesson (e.g., completed evaluation tool, student notes)
4. of how students are reminded of safe practice throughout the course (e.g., notation in teacher daybook)
5. that the work and learning environments are kept safe, tidy, and in good condition (e.g., photos, focus on machines with guards in place, maintenance records, safety inspections, cleanup procedures, student safety stewards, modelling of best practices), and that the Head Caretaker is informed of any maintenance issues

6. that students' different learning styles and needs are taken into account, both during the delivery of the safety lessons and during any follow-up evaluation (e.g., use of visuals, opportunities to demonstrate understanding orally)
7. that safety procedures are explained using various strategies such as verbal explanation, demonstrations through modelling, and accompanied by both written and pictorial explanations that are posted throughout the work and learning environments
8. that accommodations and, if necessary, modifications are made to the curriculum and included in the Individual Education Plan (IEP) in the event that the student cannot manage all curriculum expectations safely
9. that each student has signed the annual acknowledgment form, stating that he/she has been informed of the safety procedures

## **LOCKING OUT AND TAGGING OUT EQUIPMENT**

The process for Teachers for locking out and tagging out equipment is as follows:

- If the equipment can be locked out by way of a power switch located on the actual piece of equipment, by use of a padlock, then the Teacher can lock it out.
- If the power cannot be locked out at the equipment, then the Head Caretaker must be notified and the power should be locked out at the panel box.
- Lockout is always required when repairs/adjustments are being performed on any piece of equipment.
- Once the equipment is locked out, it must be "Tagged Out" by attaching an appropriated tag in a conspicuous location, showing the worker's name and reason for lockout, along with the date and time.
- Notify the school Administration and the Head Caretaker once lockout and tag-out have occurred.

### **1.4 STUDENTS**

Students demonstrate that they have the knowledge, skills, and habits of mind required for safe participation in Science and Technology activities when they:

- maintain a well-organized and uncluttered workspace
- follow established safety procedures
- identify possible safety concerns
- suggest and implement appropriate safety procedures
- carefully follow the instructions and example of the Teacher

- consistently show care and concern for their own safety and that of others

### **1.5 BOARD FACILITIES**

- Inspect the Technology areas on at least an annual basis with respect to maintenance items such as gas leaks, electrical outlets, safety indicators or signs, ventilation, and any other potential hazards.
- Report the results of the inspection to the Principal.
- If work is planned in a Technology area, ensure the Teachers are informed and check for special hazards which may be present.
- Before working in a shop or on any of the shop services, inform the Teacher what will be done, and when the work will be starting and finishing. The classroom Teacher is responsible for ensuring that work area within the room is free from physical and chemical hazards.
- In situations where the hazard cannot be totally removed, specific work procedures must be developed in conjunction with the Teacher and the Health and Safety Officer.

### **1.6 CUSTODIAN/MAINTENANCE**

- Daily removal of garbage, scraps, and waste must be organized and coordinated with the Caretaking staff.
- After the Teacher informs the Head Caretaker, it is the Head Caretaker's responsibility to clean the hoppers. Hoppers, hoods, filters, and ducts that are subject to accumulation of sawdust deposits should be inspected and cleaned at least every two weeks.
- Be aware of the hazards in the Technological Education areas.
- Know the hazard warning signs and symbols and proper safety precautions.
- Do not handle unfamiliar materials. Do not handle or move chemicals in the shop.
- In the event of an emergency or concern, know the individuals who should be contacted and how to reach them.
- Know the proper handling and disposal of materials before disposing.
- If the contents of any containers are spilled, the school must adhere to the Spill Procedures. **DO NOT TOUCH OR ATTEMPT TO CLEAN UP.** Contact the Principal or your supervisor, who will then contact the appropriate person/department.

- Ensure that the Technology shops are secure during non-class hours after school, and at night. This is especially important if the school building is used after school by the community user groups.

## **2.0 TECHNOLOGICAL EDUCATION SAFETY PROCEDURES**

### **2.1 HOUSEKEEPING STANDARD**

In order to prevent personal hygiene infections and accidents that are caused by tripping and slipping, the following procedures must be adhered to:

- A class-by-class cleanup procedure must be in place, where tools are returned to proper storage areas, bench and table tops are clear of materials; machinery is properly cleaned off, with cuttings and scraps safely stored; the floor area is swept free of scraps and excessive sawdust; and machine cabinets are regularly cleared of sawdust.
- Floors must be kept free and clear.
- A well-maintained cleanup area for students to wash is required.
- Hazardous/biohazardous materials must be removed in compliance with the TDSB Health and Safety Guidelines. Disposal can be arranged through the Health & Safety Office.
- Teachers are expected to follow the procedures that are in place for the removal of sawdust and waste oil from Technological Education facilities.

### **2.2 EYE PROTECTION**

In order to prevent eye injuries, the following procedures shall be adhered to by all employees, students, and visitors when tools and machines are in use:

- Appropriate CSA-approved eye protection shall be worn at all times in the school shop areas.
- CSA-approved eye protection may be purchased by each school from the TDSB Distribution Centre.
- Appropriate eye protection shall be worn at all times when students, employees, and visitors are engaged in specialized welding activities.
- ANSI/CSA-approved welding helmets shall be in place to protect students, employees, and visitors when arc and MIG welding is in operation.
- ANSI/CSA-approved welding eye and face protection may be purchased from TDSB authorized welding suppliers.

- All students and employees must be familiar with the proper use of an eyewash station. Eyewash stations should be checked regularly, in particular, prior to students participating in an activity where there is a risk of eye injury. Eyewash stations must be kept in good working order.

### **2.3 CHEMICAL SAFETY, HAZARDOUS MATERIALS, AND FLAMMABLE LIQUIDS**

The storage, use, and disposal of chemicals must be handled according to the Workplace Hazardous Materials Information System (WHMIS).

In order to prevent injuries resulting from chemicals, hazardous materials, and flammable liquids:

- Teachers and classroom support staff must complete (WHMIS) training
- the Technological Education Teacher must maintain a list of all chemicals (names and quantities) used and stored in the classroom proper or suite and obtain MSDSs
- the Technological Education Teacher must be aware of how to access up-to-date MSDSs for chemicals that they use. (See WHMIS icon on TDSB desktop.)
- the Technological Education Teacher may also keep MSDSs in a binder located in an area that is easily accessible. These sheets must not be older than three years.
- the Technological Education Teacher needs to ensure all chemicals are stored properly
- the Principal or designate must ensure that waste chemicals are disposed of in accordance with Board procedures
- chemicals that require teacher supervision must be kept in a locked cabinet
- students must receive instruction specific to the safe use of chemicals used in the classroom
- store all flammable liquids and chemicals in approved flammable storage containers. Self-closing container lids must be checked and kept clear of any material that restricts the lid from fully closing.

### **2.4 PROTECTIVE CLOTHING**

In order to prevent injuries while engaged in activities, the following procedures must be adhered to by all students, employees, and visitors:

- Appropriate protective clothing must be worn before engaging in activities such as:
  - high heat
  - chemical use
  - material handling
  - tool and machine operation

- Personal protective clothing with drawstrings or any loose material must be tied securely at the back.

## **2.5 FOOTWEAR**

In order to prevent injuries from slipping, burns, or sharp objects the following procedures must be adhered to by all students, employees, and visitors:

- Closed-toe shoes must be worn at all times in the shop area. All areas of the feet must be covered and enclosed in the footwear.
- Appropriate safety footwear must be worn by students and employees participating in Cooperative Education and work experience.

## **2.6 HAIR, JEWELLERY, CLOTHING, AND LOOSE ITEMS**

In order to prevent injuries while operating machinery and small power tools, the following procedures must be adhered to:

- Students and employees must remove or suitably contain watches and any loose items that could interfere with the safe operation of a machine or power tool.
- Any jewellery that interferes with the proper fitting of any personal protective equipment must be removed.
- Students, employees, and visitors must have hair suitably contained, to avoid contact or entanglement with moving parts and equipment.
- Students, employees, and visitors must have hair suitably contained, to avoid contamination and disease transmission.

## **2.7 MAIN SHOP ELECTRICAL CONTROL PANEL**

When working in a technological facility that has a main electrical control panel for the machinery and equipment contained within that shop, the following procedures must be adhered to:

- Students must never operate the main electrical control panel in the shop—these duties are to be performed only by the Technological Education Teacher.
- Students must be familiar with the location and operation of emergency power shut-off switches (“panic buttons”) in the shop environment, and must receive training in the correct use of such a system.
- Powered equipment must never be operated by students unless a Technological Education Teacher is present and supervising the shop.

## **2.8 MACHINE GUARDS**

In order to prevent injuries while operating machinery, the following procedures must be adhered to by all students and employees:

- Machine guarding and other protective equipment (e.g., push sticks) must be in place before operating machines.
- Damaged or broken guards must be attended to immediately by the Teacher. Machinery must not be operated with a damaged or broken guard.
- Guards or other protective equipment may not be removed from any machinery.