

# SAFE

## TECHNOLOGICAL DESIGN TECHNOLOGY



ONTARIO COUNCIL  
FOR TECHNOLOGY  
EDUCATION

### **SAFE ACTIVITY FOUNDATIONS IN EDUCATION DOCUMENT**

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TDJ2O Technological Design: Open  
TDJ3M/4M Technological Design: TDJ3 Prerequisite  
TDJ3O/4O Technological Design: OPEN

TDA3M Technological Design: Architectural Design  
TDM3M Technological Design: Mechanical and Industrial Design  
TDP3M Technological Design: Apparel and Textile Design  
TDR3M Technological Design: Robotics and Control System Design  
TDV3M Technological Design: Interior Design  
TDA4M Technological Design: Architectural Design  
TDM4M Technological Design: Mechanical and Industrial Design  
TDP4M Technological Design: Apparel and Textile Design  
TDR4M Technological Design: Robotics and Control System Design  
TDV4M Technological Design: Interior Design



This resource was produced by the Ontario Council for Technological Education (OCTE) in support by the Ministry of Education. It may be used in its entirety, in part, or adapted.

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## Disclaimer

This material was designed to assist teachers implement the Ontario Curriculum – Technological Education (revised Grade 10 -12) but is fully adaptable to the Ontario Curriculum Grade 1 – 8 Science and Technology curriculum. This material was created by members of the Ontario Council for Technology Education (OCTE) subject association and is intended as a working guide for classroom, lab or shop activities. Permission is given to reproduce these materials for any purpose except profit. Teachers are encouraged to amend, revise, edit and adapt this material for educational purposes. Please acknowledge the source in all uses. Any references in this document to particular commercial resources, materials or equipment reflect only the opinions of the writers of this material, and do not reflect any official endorsement by the Ontario Council for Technology Education, the Ontario Ministry of Education, or any other agency or government body.

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## SECTION 1: GENERAL

### Safe Activity Foundation In Education (SAFEdoc): Technological Design

This SAFEdoc was designed to provide safety data sheets, posters, safety passports, and safety resources for all technology educators. While originally developed as a resource for the Course Profiles, it is available for any grade level or any technology education environment.

In 2013 another resource called the safetyNET was created by OCTE with many subject-specific examples of exciting student projects that incorporate varying levels of safety risk. Please review exemplar [TDJ OCTE lab safetyNET](#) resource documents created 'by teachers for teachers' with experienced tips and customization options for your course projects.

The SAFEdocs have been created for eleven separate disciplines per Ontario Ministry Courses:

Communications, (COM)	Hospitality and Tourism (HOST)
Computer Engineering Technology (CET)	Manufacturing (MANU)
Construction, Custom Woodworking (CON)	Technological Design (DESIGN)
Green Industries (GREEN)	Transportation (TRANS)
Hairstyling and Aesthetics (H&A)	Exploring Technologies (EXPL)
Health Care (HC)	

Please note that due to the cross-curricular nature of Technological Education, there may be a need to refer to other SAFEdocs for cross-discipline data sheets. For example, a Health Care teacher may need to utilize food production and handling equipment, therefore may need to refer to the HOST SAFEdocs. Teachers are encouraged to download all SAFEdocs for reference.

Teachers are encouraged to add to this SAFEdoc with data sheets, tests or other materials on an ongoing basis. Additions or revisions to this document will be posted on the Ontario Council for Technology Education (OCTE) website periodically. (<https://www.octe.ca/en/resources/safety/safedocs>)

This document is a practical safety resource that compliments and elaborates on other recommended resources for technical teachers. See the appendix for linking information such as the Young Workers Awareness Program, and industry associations dedicated to safe working practices.

It is imperative that all students are made aware of the issues of health and safety particular to your class, and that you have assessed and evaluated their understanding before they are allowed to work in a shop environment or on specific procedures or tools. The use of Safety Passports, Safety Agreements, and Safety Tests (provided in this document) is highly recommended.

NOTE: While it is important to give students initial safety training and testing at the beginning of the semester, it is also important to practice JIT Safety Training (Just In Time). Reinforce specific safety procedures and rules each day before initiating new procedures or using equipment. For example, before students use a bandsaw, review the setup and ask key questions of students before allowing its use.

## USAGE OF THE SAFEdocs

Teachers are encouraged to use and modify this document as they see fit. Individual pages may be directly printed, or custom formatting may be applied for printing any part of the document. General Guidelines may be used in Board or school policy documents. Safety Guidelines may be used as student handouts, as a teacher reference for tests, or printed and mounted as posters around equipment.

The SAFEdoc also contains sample Safety Passports. These can be used as verification that students have been trained and understand the safety aspects of each equipment or procedure, they need to use to accomplish their tasks. There are several formats that may be used. Teachers are encouraged to keep consistent records at all times.

It is important that teachers are knowledgeable about their own Board and school policies regarding safety, and that they are familiar with local municipal regulations.

## Responsibilities for Safety

[From the Ontario Ministry of Education, The Ontario Curriculum (Revised) 2009, Technological Education, Grades 9 and 10 (page 28); Grade 11 and 12 (page 33)]

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 \(WHMIS2015\)](#)
- 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:

- Ministry of Labour, Immigration, Training and Skill Development – website (<http://www.labour.gov.on.ca/english/>) and related resources
- Young Workers Awareness – website (<https://www.labour.gov.on.ca/english/atwork/youngworkers.php>) and related resources
- Workplace Safety and Insurance Board (WSIB) – website (<http://www.wsib.ca/>) and related resources
- Workplace Safety and Prevention Services (WSPS) – website (<https://www.wsps.ca/Home.aspx>) and related resources
- Canadian Centre for Occupational Health and Safety (CCOHS) – website (<http://www.ccohs.ca/>) and related resources
- Ontario Ministry of Health – website (<https://www.ontario.ca/page/ministry-health>) and related resources
- Appropriate Safe Workplace Associations (SWAs) and clinics, such as:
  - the Infrastructure Health & Safety Association of Ontario (IHSAO) – website (<https://www.ihsa.ca/Homepage.aspx>)
  - the Workers Health & Safety Centre (WHSC) – website (<http://www.whsc.on.ca/>)
  - the Occupational Health Clinics for Ontario Workers (OHCOW) – website (<http://www.ohcow.on.ca/>)

Teachers should also be aware of the Occupational Health and Safety Act, Regulations 857, Amended to O. Reg. 352/91. The Occupational Health and Safety Act can be found at:  
[http://www.e-laws.gov.on.ca/html/regs/english/elaws\\_regs\\_900857\\_e.htm](http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_900857_e.htm)

## Delegating the Responsibilities for Safety

As well, there are key areas of responsibility that must be clearly delegated for all technological subject areas and they must be addressed for their individual board, school and facility.

These may include administration, department heads, technology teachers, students, board facilities, custodian/maintenance and other local partners or board-defined roles.

\* An original source of this delegation example has been adapted from the Toronto District School Board – Experiential Learning Department – Technological Education ‘Front Matter’ for the purposes of the SAFEdoc revision 2013. Please note that this section is not original to the SAFEdoc writers but is a result of collaboration between the TDSB and COTE. This in no way refers to any responsibility to the TDSB for this information and has been provided as a guideline reference only.

## 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.

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
- 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

## Department Heads / Curriculum Chairs/Program Leaders

The Department Head is the intermediary between the individual Teacher and Administration. Each Department Head 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 Department Head 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
  - ☐ school Defibrillator
  - ☐ posted emergency phone numbers
  - ☐ 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 there is Personal Protective Equipment (PPE) available for Technology staff
- 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
- 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 Safety Data Sheets (SDSs) are maintained
- ensure that no unapproved or unsafe equipment, materials, or procedures are used in the area. Equipment should be purchased through Board-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

## 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 their Board Safety Documents that outline safety procedures for machinery, tools, equipment, and procedures by completing advised Board Training.

Use of Board 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:

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. 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. This specific training requirement applies to listed equipment in all areas of technology education specialization.

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, modeling 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 modeling, and accompanied by both written and pictorial explanations that are posted throughout the work and learning environments
8. those 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 appropriate 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.

## 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 and bring this to the attention of the teacher
- 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

## Board Facilities

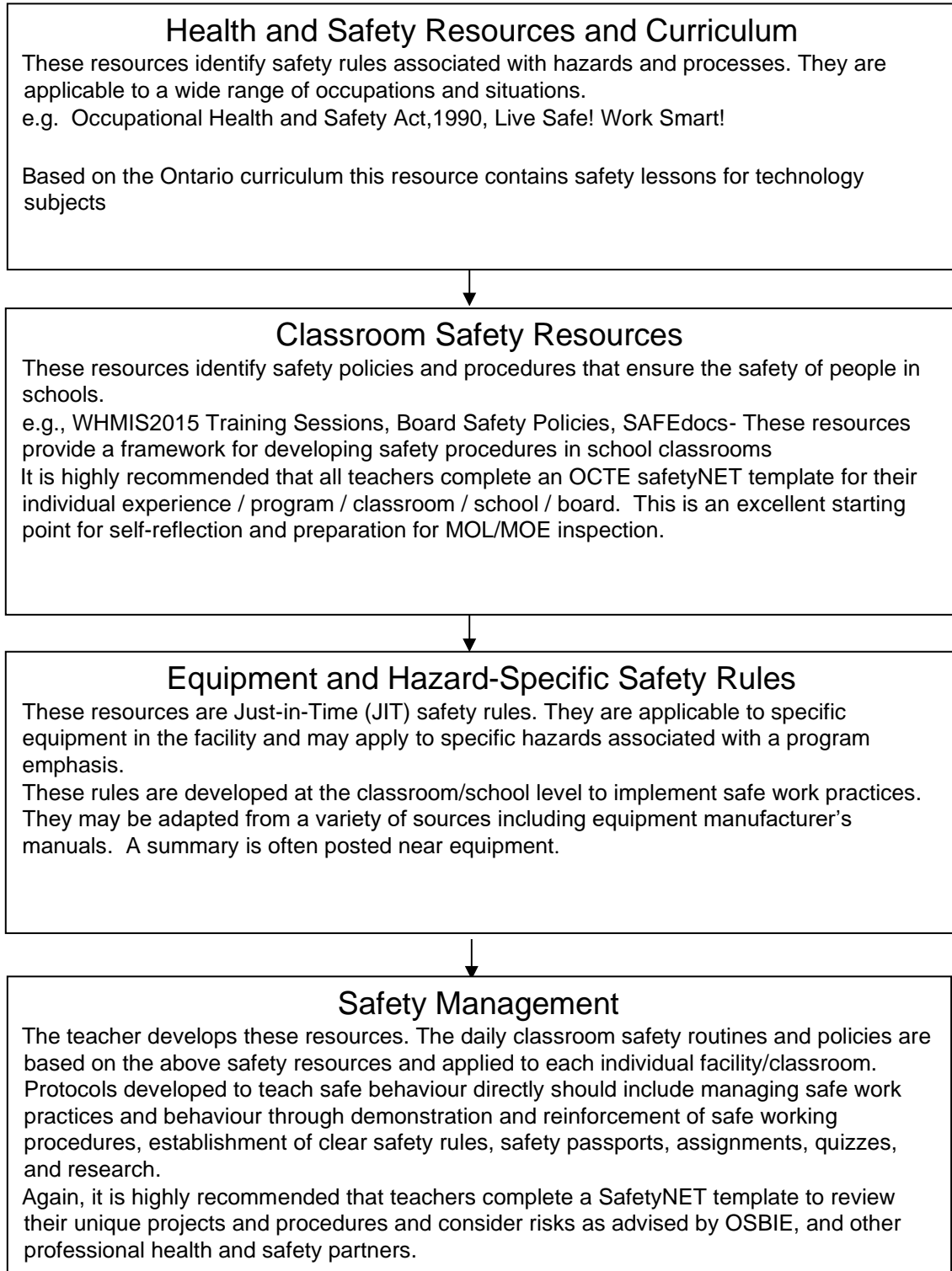
- Inspect the Technology areas on at least an annual basis with respect to maintenance items such as gas leaks, electrical outlets, safety indicators or signs, ventilation, and any other potential hazards.
- Report the results of the inspection to the Principal.
- If work is planned in a Technology area, 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 the 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.

## Custodian / Maintenance

- Daily removal of garbage, scraps, and waste must be organized and coordinated with the Caretaking staff. Note the policies and responsibility related cleaning varies from school board to school board as it relates to collective bargaining, therefore the teacher/department head is encouraged to consult with the head custodian and the school board health and safety officer to determine who is responsible for cleaning of hoppers, dust collectors, filters and ducts
- 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.

## Safety Perspective Overview





## Safety Topics for the Classroom

The following are suggested topics for teaching in the classroom. See Appendix A for available resources pertinent to general safety and particular safety rules and procedures for your subject area. See Appendix B for specific resources or links that are associated with Technological Design. See also your Board, school and relevant municipal policies for local safety rules and procedures.

Emergency Procedures	procedures for handling fire, security threats, and other emergencies
First Aid	procedures for handling breathing difficulties, bleeding, burns, allergic reactions, epileptic seizures, etc.
Hand Washing	Health Canada procedures for hand washing require hand washing to last twenty (20) seconds
Personal Protective Equipment	use of eye, hearing, foot, body, respiratory protection
Ergonomics	safe posture when using equipment, avoiding repetitive stress injuries
Material Handling	procedures for safely handling heavy loads, chemicals, potentially hazardous materials
Housekeeping and Storage	procedures and rules regarding maintaining safe facilities and proper storage of materials and equipment
Fire Protection	location and types of fire protection equipment, procedures to follow in the event of a fire or fire alarm

## WHMIS2015

Workplace Hazardous Materials Identification System 2015  
governs the identification and safe use of hazardous materials

## Communication

It is important to the safety of all students and staff at a school that safety be taught and reinforced on a daily basis. Some basic methods of communication are:

- ☐ Safety Notice Board, containing posted minutes from the joint health and safety committee and the Occupational Health and Safety Act (must be posted by law);
- ☐ visible WHMIS2015 binders, symbols and SDS sheets, access to online SDS information;
- ☐ readily available manuals for the operation of various types machinery, tools or equipment;
- ☐ safety posters around major equipment and work areas;
- ☐ clear and precise instructions, reinforced each time a procedure or equipment is used;
- ☐ clearly marked areas that contain safety items such as fire extinguishers, eye wash stations, first aid kits, etc.

## SAFETY EXPECTATIONS

The following are safety related expectations from The Ontario Curriculum 2009 (Revised) - Technological Education for:

### TDJ4M: Technological Design- Grade 12 - University/College Preparation

#### C. TECHNOLOGY, THE ENVIRONMENT, AND SOCIETY

C1. demonstrate an understanding of environmentally responsible design practices, and apply them in the technological design process and related activities.

C1.3. describe, advocate for, and apply best practices for conserving energy and other resources when designing a product or process (e.g., reuse or recycle lumber and other materials; use materials with recycled content; use wood glue instead of hot glue; use renewable energy sources, high-efficiency motors and appliances, and passive heating and cooling of buildings).

C1.4. describe ways to reduce the waste produced by the manufacture and use of products (e.g., cutting patterns that minimize leftover materials, use of materials that are easily recycled, energy-management controls in electronic equipment), and apply such practices when developing and building prototypes.

#### D. PROFESSIONAL PRACTICE AND CAREER OPPORTUNITIES

D1. describe and apply personal and environmental health and safety standards and practices related to technological design.

D1.1. identify and describe the bodies and agencies that regulate, promote, and test the safety of technological products and/or processes (e.g., Health Canada, Canadian Society of Safety Engineering [CSSE], Canadian Standards Association [CSA]), and explain how they work to prevent accidents and enforce standards (e.g., certification, product recalls);

D1.2. adhere to and promote personal and environmental health and safety standards and procedures with respect to processes, materials, tools, equipment, and facilities throughout the design process and when performing related activities (e.g., use protective equipment; set tool and equipment guards properly; ensure adequate ventilation and ergonomic workplace arrangements; follow safe operating procedures and maintain tools and equipment in good working condition; keep work areas clean and organized; store materials and dispose of wastes properly; report safety violations);

D1.3. use protective clothing, gear, and equipment appropriately (e.g., dust mask, safety glasses);

D1.4. describe the rights and responsibilities of employees under the Occupational Health and Safety Act (e.g., right to know, right to refuse, right to participate).

### TDJ4O Technological Design - Grade 12 - Open

#### C. TECHNOLOGY, THE ENVIRONMENT, AND SOCIETY

C1. demonstrate an understanding of environmentally responsible design practices and strategies, and apply them in the technological design process and related activities

C1.1. demonstrate an understanding of environmental issues that affect product design (e.g., finite non-renewable resources, pollution, wastes, greenhouse gases, climate change, ozone depletion, life cycle of products);

C1.2. describe, promote, and apply design practices that conserve energy and other resources (e.g., reuse or recycle lumber and other materials, use materials with recycled content, use wood glue instead of hot glue, use energy-management software for computers and other electronic equipment, use renewable energy, use high-efficiency motors and appliances);

#### D. PROFESSIONAL PRACTICE AND CAREER OPPORTUNITIES

D1. describe and apply appropriate health, safety, and environmental practices and standards throughout the design process;

D1.1. describe health and safety laws, regulations, standards, and agencies that relate to technological design (e.g., Ontario Building Code, Canadian Standards Association [CSA], Ministry of Labour);

D1.2. adhere to personal and environmental health, tools, equipment, and facilities throughout the design process and related activities (e.g., use protective equipment; set tool and equipment guards properly; ensure adequate ventilation and ergonomic seating and other workplace arrangements; follow safe operating procedures; keep work areas clean and organized; store materials and dispose of wastes properly);

D1.3. use protective clothing, gear, and equipment appropriately (e.g., dust mask, safety glasses);

D1.4. describe the rights and responsibilities of employees under the Occupational Health and Safety Act (e.g., right to know, right to refuse, right to participate).

### TDJ3M Technological Design - Grade 11 - University/College Preparation

#### C. TECHNOLOGY, THE ENVIRONMENT, AND SOCIETY

C1. demonstrate an understanding of environmentally responsible design practices, and apply them in the technological design process and related activities;

C1.2. describe, advocate, and apply best practices for conserving energy and other resources when designing a product or process (e.g., reuse or recycle lumber and other materials; use materials with recycled content; use wood glue instead of hot glue; use renewable energy sources, high-efficiency motors and appliances, and passive heating and cooling of buildings);

C1.3. describe ways to reduce the waste produced by the manufacture and use of products (e.g., cutting patterns that minimize leftover materials, use of materials that are easily recycled, energy-management controls in electronic equipment), and apply such practices when developing and building prototypes.

#### D. PROFESSIONAL PRACTICE AND CAREER OPPORTUNITIES

D1 describe and apply health, safety, and environmental practices related to technological design;

D1.1. describe the importance of health and safety laws, regulations, and standards that apply to technological design (e.g., regulations and standards from the Occupational Health and Safety Act, Canadian Standards Association [CSA], Ontario Building Code, and Workplace Hazardous Materials Information System [WHMIS2015]);

D1.2. adhere to appropriate personal and environmental health and safety standards and procedures with respect to processes, materials, tools, equipment, and facilities throughout the design process and when performing related activities (e.g., use protective equipment; set tool and equipment guards properly; ensure adequate ventilation and ergonomic seating and other workplace arrangements; follow safe operating procedures; keep work areas clean and organized; store materials and dispose of wastes properly);

D1.3. use protective clothing, gear, and equipment appropriately (e.g., dust mask, safety glasses).

### TDJ3O Technological Design - Grade 11 - Open

#### C. TECHNOLOGY, THE ENVIRONMENT, AND SOCIETY

C1. demonstrate an understanding of environmentally responsible design practices and strategies, and apply them in the technological design process and related activities.

C1.2. describe and apply best practices for conserving energy and other resources when designing a product or process (e.g., reuse or recycle materials, use wood glue instead of hot glue, use energy management systems for computers).

#### D. PROFESSIONAL PRACTICE AND CAREER OPPORTUNITIES

D1 describes and applies appropriate health, safety, and environmental practices and standards throughout the design process.

D1.1 investigate and describe health, safety, and environmental laws, regulations, standards, and agencies that can affect technological design (e.g., Ontario Environmental Bill of Rights, Clean Water Act, Canadian Standards Association [CSA] standards, Workplace Hazardous Materials Information System [WHMIS2015]).

D1.2 demonstrate an understanding of and follow personal and environmental health and safety procedures with respect to processes, materials, tools, equipment, and facilities throughout the design process and when performing related activities (e.g., use protective equipment; set tool and equipment guards properly; ensure adequate ventilation and ergonomic seating and other workplace arrangements; follow safe operating procedures; keep work areas clean and organized; store materials and dispose of wastes properly).

D1.3 uses protective clothing, gear, and equipment appropriately (e.g., dust mask, safety glasses).

## TDJ20 Technological Design - Grade 10 - Open

### C. TECHNOLOGY, THE ENVIRONMENT, AND SOCIETY

C1 demonstrates an understanding of environmentally responsible practices, and applies them throughout the technological design process.

C1.1 identify environmental issues that affect technological design (e.g., global climate change, resource depletion, conservation, toxins);

C1.2 describes and applies best practices for conserving energy and other resources during the design process (e.g., use wood glue instead of hot glue, plan projects to make efficient use of materials and equipment, reuse and recycle prototype material).

### D. PROFESSIONAL PRACTICE AND CAREER OPPORTUNITIES

D1 apply appropriate health, safety, and environmental practices throughout the design process;

D1.1 identify health and safety regulations and standards that must be considered when designing products and/or processes (e.g., regulations and standards from the Canadian, Standards Association, Ontario Building Code,

and Workplace Hazardous Materials Information System [WHMIS2015]);

D1.2 demonstrate an understanding of and follow personal and environmental health and safety procedures with respect to processes, materials, tools, equipment, and facilities throughout the design process and related activities (e.g., use

protective equipment; set tool and equipment guards properly; ensure adequate ventilation and ergonomic seating and other workplace arrangements; follow safe operating procedures; keep work areas clean and organized; store materials and dispose of wastes properly).

## INTERNET ACCEPTABLE USE AGREEMENT FORM

The form below is a sample agreement form that can be used along with your board or school's Internet use policy and guidelines.

INTERNET ACCEPTABLE USE AGREEMENT FORM
<p><b>To Students:</b></p> <p>I, the undersigned, indicate by my signature that I have read and understand fully the Acceptable Use Policy and related guidelines. I agree that I will abide at all times to the rules and responsibilities as outlined in the Acceptable Use Policy and related guidelines. I also agree that I clearly understand the consequences of my failure to abide by these rules and regulations.</p> <p><b>To Parents/Guardians</b></p> <p>As a parent or guardian signing below, I indicate that I understand the rules, regulations and consequences of misuse governing my son or daughter's use of the Board's computer and information technology facilities and resources. I understand that all Board staff will make every attempt to ensure proper and acceptable use in line with relevant policies, laws and regulations. I hereby allow my son or daughter to access the Board's supervised facilities and resources.</p> <p>Student Name:</p> <p>Student Signature:</p> <p>Date:</p> <p>Parent/Guardian Full Name:</p> <p>Parent/Guardian Signature</p> <p>Date;</p>

## STUDENT CONDUCT AGREEMENT

A signed agreement that outlines the student's responsibilities is one way of establishing the seriousness of daily safety vigilance. An agreement covers the elements common to all technology classrooms and labs and lays out the framework for a safe and healthy working environment for both staff and students. An example of an agreement is given below.

STUDENT CONDUCT AGREEMENT FORM	
I, _____	agree to:
<p>Ensure a safe workplace</p> <ol style="list-style-type: none"> <li>1. Inform teachers of all injuries, damaged equipment and potentially dangerous situations.</li> <li>2. Make sure I know all fire exits and power shutdown switches and how to use them during emergency situations.</li> <li>3. Not compromise the safety of others through horseplay or aggressive action.</li> <li>4. Only use equipment when properly trained, always with any necessary personal protective equipment, and when I fully understand all related safety issues</li> <li>5. Ask for assistance from the teacher when I am unsure of the proper procedures or health and safety issues</li> </ol> <p>Prescribed and Non-prescribed Medications, for safety the student should;</p> <ol style="list-style-type: none"> <li>1. Report any use of prescription medications and inform teachers of any possible side effects of the medication [e.g., penicillin, phenobarbital]</li> <li>2. Report any use of non-prescription medication and any possible side effects of the medication [e.g., Reactine, Benadryl, cough syrups]</li> <li>3. Never enter a shop or lab carrying, or under the influence of illegal substances or other substances that may impair a person.</li> </ol> <p>Consequences for Improper Action</p> <p>I understand that failure to comply with this agreement may result in injury to myself or others, and that failing to comply with safety procedures may result in my removal from the class or shop.</p> <p>I have read the above and understand the expectations and consequences.</p> <p>Student signature: _____</p> <p>Parents signature _____</p> <p>Date: _____</p>	

## SECTION 2: SAFETY INFORMATION SHEETS

### SECTION OVERVIEW

This section contains Safety Sheets. (Listed in alphabetical order) that can be used as:

- Student handouts
- Safety posters (can be mounted in and around specific equipment or bulletin boards)
- Teacher notes in project binders, safety binders or assessment plans
- Information that can support a lesson(s)

Safety Sheets contain information specific to various common tools and procedures. Before using them, ensure they accurately describe your own particular facilities and equipment, and that they align with specific manufacturer's safety instructions.

#### NOTE:

All materials within this document are to be considered as suggestions and recommendations only. These are not legal documents and are not to be considered as legal requirements or as official policy. OCTE or the individual contributors makes no claim to the accuracy or the completeness of the enclosed documents and accepts no responsibility for any damages pertaining to their use. Users of this document should not assume all warnings and precautionary measures are contained herein, that additional information or measures are not required, or that local by-laws, regulations or Board policies are explicitly included.

Please see specific equipment manuals for further safety information, as well as local, Board and school policies and regulations. Please review exemplar TDJ OCTE lab safetyNET resource documents for experienced teacher tips and customization options for your course projects.



# Adhesives

Please observe the following precautions before using the adhesives, to ensure safe and effective use.

1. Always read and follow manufacturer's use and safety instructions.
2. Be sure to read Safety Data Sheets (SDS) and instruction manuals of the adhesives and understand the product characteristics well (particularly regarding safety).
3. Adhesives can cause rashes and breathing problems depending on working conditions. Take care to avoid contact with eyes and skin. In case of eye contact, flush eyes immediately with water and seek medical attention.
4. Wear adequate protection as required. Protect your skin, eyes and respiratory tract by wearing gloves, safety goggles and a respiratory mask. When you open the container and start the application.
5. Work in a well-ventilated area. Excessive exposure to adhesives can cause breathing problems and headaches in some people.
6. Use recommended amounts only. Never use excessive amounts of wood glue to try and achieve a better result. Excessive use of these substances is harmful to the user and also to the environment. Refer to the usage instructions and follow them properly.
7. Never leave the lid open. Before storing the container of wood glue, ensure that it is tightly shut. A loose cap can cause the wood glue to dry very fast and also emanate fumes in some cases.
8. Dispose of safely. After you finish using adhesives, you must dispose of the empty container safely. Never pour remaining amounts in the sink or down the drain. It can clog your pipes and also leach into waterways. Refer to your board health and safety contacts to determine if the adhesive you are using falls under the hazardous waste category in your area.
9. Seek medical attention in case of ingestion or inhalation. If certain adhesives are inhaled in excessive amounts or consumed, it can cause serious health complications. If the concerned person has inhaled an adhesive and is feeling sick, move them outdoors for some fresh air. If their condition does not improve, follow appropriate school/board policies.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Band Saw

1. Wear Personal Protective Equipment (PPE) such as safety glasses, safety goggles, face shields, gloves and proper clothing as appropriate.
2. No loose clothing, long hair or jewelry is allowed in the shop.
3. Do not operate the band saw without the instructor's permission.
4. Follow the manufacturer's instructions for changing tool accessories.
5. Be aware of the position of the on/off switches and emergency STOP button.
6. Make all adjustments with the power off.
7. Use both hands and keep fingers at least 10cm (4") from the blade at all times; adjust guard prior to turning the saw on.
8. Keep the upper guide less than 5mm (1/4") from the material being cut.
9. Plan your cuts carefully. Saw curves gradually. Sudden twists may cause the blade to bind or break. Use relief cuts if necessary.
10. If the blade breaks, turn the power off immediately and step back. Inform the instructor immediately.
11. Always make short cuts first. Avoid backing out of cuts with the power on. Backing out of a cut may cause the blade to come off of the drive wheel.
12. Do not cut cylindrical stock without the use of a V block clamp.
13. Remove scrap pieces from the table only after the blade has stopped.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

## BAND SAW (Cont.)

14. Always operate the saw from the front, never from the side.
15. Do not leave the band saw until the blade has stopped.
16. Ensure that the blade is running at full speed before starting a cut.
17. Cut on the waste side of your line, leaving the pattern line on the work.
18. Keep your hands beside or behind the blade. Never in front. Use a push stick on small pieces.
19. Make sure all guards are in place and properly adjusted. Ensure all band wheels are enclosed.
20. Ensure the blade is tracking correctly and runs freely in the upper and lower guide rollers. Ensure the blade is under proper tension. See your instructor for guidance.
21. Use band saw blades that are sharp, properly set and otherwise suitable for the job (e.g., the right tooth pitch; tooth form; blade width).
22. Hold the stock firmly and flat on the table to prevent the stock from turning and drawing your fingers against the blade.
23. Use a push stick when you remove cut pieces from between the fence and saw blade or when your hands are close to the blade. Keep your hands on either side of the blade - not in line with the cutting line and the blade.
24. Always reference the owner's manual before operating and servicing equipment.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

## Belt and Disk Sander

1. Wear Personal Protective Equipment (PPE) such as safety glasses, safety goggles, face shields, gloves and proper clothing as appropriate.
2. No loose clothing, long hair or jewelry is allowed in the shop.
3. Do not operate the belt and disc sander without the instructor's permission.
4. Be aware of the position of the on/off switches and emergency STOP button.
5. Remove all the sawdust around the belt/disc sander.
6. Do not operate if the abrasive paper is loose or torn.
7. Ensure that power is off when changing the belt.
8. Sand only on the rotating-down side surface of the disc-sander.
9. Sand only on dry wood.
10. The stock must be positioned against the table at all times.
11. Belt sander roll end and side guards should be properly adjusted and in good condition.
12. Do not apply excessive force toward the belt or disc. Let the machine do the work.
13. Always reference the owner's manual before operating and servicing equipment.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

## Chemical Handling

1. Before handling any chemicals, ensure you understand the safe handling procedures as outlined on container labels, WHMIS2015 data sheets, designated instructions or posted classroom procedures as appropriate. If you are unsure, see your instructor before proceeding.
2. Place any chemicals in approved, labeled containers ONLY.
3. DO NOT mix chemicals without prior knowledge of the consequences.
4. Discard any used chemicals in approved disposal containers ONLY. Ensure instructors are aware of near-full containers. DO NOT dispose of chemicals down drains. Ask your instructor for proper disposal methods and procedures.
5. Ensure that there is adequate ventilation when using chemical substances.
6. Do not use any chemical for any other purpose other than what it is designed for.
7. Use appropriate PPE (personal protection equipment) at all times when handling chemicals. PPE includes eye protection, skin protection, gloves, aprons or coveralls, foot protection, as required under safe operating procedures.
8. Take note of expiry dates and storage requirements of chemicals. Do not use chemicals beyond their expiration.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Computer and Electrical Devices

1. Use all computer equipment with care. Electrical devices use and retain potentially lethal voltages.
2. Do not touch equipment that has come in contact with fluids. Risk of electric shock is greater in areas that are wet or damp. Do not operate any electrical equipment or computers in wet or damp areas.
3. When working with cords and cables, grasp the plastic insulation around the plug.
4. To protect equipment from accidental damage, do not place coats, backpacks, food, or beverages on or near computer tables.
5. Respect the rights of others who use the computer room by keeping it tidy and accepting responsibility for equipment used, including protection from theft, damage, or misuse.
6. Inspect any tools, power cords, and electrical fittings for damage or wear prior to each use. Use cords or equipment that are rated for the level of amperage or wattage that you are using. Do not use outlets or cords that have exposed wiring. Report immediately any damage to your teacher for repair or replacement of the damaged equipment.
7. Make sure extension cords do not present a tripping hazard.
8. Be aware that unusually warm or hot outlets may be a sign that unsafe wiring conditions exist. Unplug any cords to these outlets and do not use them until your instructor has checked the wiring.
9. Know where the circuit breakers are located in case of an emergency.
10. Do not touch a person or electrical apparatus in the event of an electrical accident. Always disconnect the electrical current first.
11. Always reference the owner's manual before operating and servicing equipment.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Dremel Tools

Despite its apparent simplicity, a Dremel rotary tool is a complex and potentially dangerous device that can cause fire and electric shock. Like any power tool, there are certain standard precautions an operator should take.

1. A Dremel tool should be used only in a clean, ventilated and well-lit workplace, with proper safety equipment (such as hand and eye protection). Wear Personal Protective Equipment (PPE) such as safety glasses, safety goggles, face shields, gloves and proper clothing as appropriate.
2. Do not operate the Dremel tool without the instructor's permission.
3. For models with rechargeable batteries, the batteries should be stored away from small metal objects such as paper clips and nails that could accidentally cause the terminals of the battery to short, causing sparks or a fire.
4. A battery pack should never be placed into a Dremel tool with the switch in the on position and should always be disconnected when changing the bit to prevent and should always be disconnected when changing the bit to prevent accidental start-ups.
5. Because of the high torque of the rotary tool, if the bit is touching something when it is turned on, the handle can twist, causing it to move in your hands. Always grasp the handle firmly when operating the tool.
6. The tool should not be used when it may come into contact with hidden live wiring.
7. Use straight motions with any cutting wheels; an altered angle during cutting can cause the wheel to break.
8. Do not touch the bit or collet immediately after use, because they will be hot.
9. Keep your hand away from any spinning bit; because of the high speeds, the location of the spinning bit may not always be obvious.
10. Accessories should only be used at the speeds they are approved for; running them at speeds too high may cause them to fly apart and cause injury.
11. Wire and bristle brushes should be allowed to run for a minute before use, as loose bristles may be rotated loose. Brushes should never be operated at speeds greater than 15,000 rpm, which may cause the bristles to become dislodged and become embedded in skin.

12. Never leave a running tool unattended.
13. Never leave a tool in the on position if the battery has been removed or the bit has jammed.
14. Make sure that your FACE SHIELD OR SAFETY GLASSES are in place before you start the drill press.
15. Always tie back long hair and keep your head and clothes well away from all moving parts of the drill press.
16. Always reference the owner's manual before operating and servicing equipment.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**



## Drill Press

1. Make sure that your FACE SHIELD OR SAFETY GLASSES are in place before you start the drill press.
2. Always tie back long hair and keep your head and clothes well away from all moving parts of the drill press.
3. No loose clothing or jewelry is allowed in the shop.
4. Do not operate the drill press without the instructor's permission.
5. Select only drills that are sharp, in good condition and suitable for the job.
6. Remove CHUCK KEYS/WRENCHES from the drill chuck before starting the machine.
7. CLAMP THE WORK SECURELY to the table before starting the machine.  
Attempting to hold the work under the drill with one hand can result in serious and painful injuries.
8. Operate drills at the proper speed and feed. Forcing or trying to feed too quickly can cause drills to break or splinter with the chance of serious injuries.
9. If work slips from the clamp, never attempt to stop it with your hands. Never reach around or in back of any rotating drill.
10. Always use a V-block for round stock.
11. Always ensure that the machine has come to a COMPLETE STOP and has been switched off before you attempt to change the belt for speed regulation.
12. If the drill sticks in the work, stop the motor and rotate the drill by hand to free it from the work.
13. File or scrape all burrs from drilled holes Be sure that the file is fitted with a proper handle.
14. Always clear away chips and curls with a HAND BRUSH – not your hands.
15. Always reference the owner's manual before operating and servicing equipment.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

## Drill (Portable)

1. Wear Personal Protective Equipment (PPE) such as safety glasses, safety goggles, face shields, gloves and proper clothing as appropriate.
2. Do not operate the drill without the instructor's permission.
3. Ensure you have a suitable safe work area.
4. Avoid wearing loose clothing.
5. Examine the drill and battery for obvious damage. If there is damage, report it to your teacher. Never operate a faulty power tool.
6. Do not use dirty or dull or damaged drill or driver bits.
7. Check the correct drill or driver bit is correctly fitted.
8. Fit the battery after all adjustments have been made.
9. Examine the material to be drilled for splits, loose knots & nails, etc.
10. Select and securely tighten the correct drill or driver bit.
11. Turn the drill on to see if the bit is centered and running true.
12. Keep fingers, hands, clothing and hair, etc., well clear of the rotating drill chuck, drill bit or driver bit.
13. Beware of hot drill bits caused by friction or abrasion.
14. Securely clamp your project to a stable work surface to avoid having hands and fingers close to the hot drill bit.
15. Allow the drill to reach operating speed, then apply load gradually. Do not apply excessive force.
16. Starting the drill hole at just the right angle and keeping it straight, takes steadiness and care. If a drill isn't held just right, the bit may bend or break, sending metal flying. Use a pointed metal punch to start your drill right.
17. Apply moderate even pressure to the drill during the drilling operation. If excessive pressure is required to make the bit cut then the bit is dull and needs to be sharpened.
18. Maintain good balance at all times when drilling.
19. Avoid blocking & covering the motor ventilation slots with your hands.
20. Be cautious of drilling too close to edges and corners.
21. Leave the work bench & cordless hand drill clean & tidy.
22. After use, return the battery for recharging.
23. Always reference the owner's manual before operating and servicing equipment.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

## Ergonomics (Computer Station)

1. Ensure you have a comfortable layout of computer equipment and notebooks or texts.
2. Surfaces should be kept neat to avoid accidental bumping of equipment or blocking ventilation.
3. The best monitor position is 55cm to 66cm (22 to 26 inches) from yourself and the top of the monitor is no higher than eye level.
4. The keyboard and monitor should be directly in front of you.
5. The mouse should be placed at the same level and as close as possible to the keyboard.
6. Sit straight up and place feet flat on the floor or fully supported by a footrest. Keep thighs parallel to the floor, at hip level, and do not cross legs. Do not lean forward to view the monitor. Upper arms should be relaxed at sides.
7. Change positions frequently. Take short 30 second breaks every 15 minutes and get up once every hour to move about.
8. Where possible, use small area lights rather than bright overall lighting. Do not place lights directly behind or in front of you. You can also reduce screen glare by using a filter attached to the monitor.
9. In the case of those who wear eyeglasses, use tinted lenses recommended for computer users.
10. For keyboarding, position the body so that it is centred on the G and H keys. Place the elbows slightly away from the sides in a relaxed position. Keep the wrists straight and in position just above the keyboard. Ensure that the keyboard is at a

height enabling the lower arms to form a 70- to 90-degree angle with the upper body.

11. Relieve long periods of computer use with breaks involving stretching and movement. Do not spend longer than 2.5 hours without taking a 15-minute break from computer use.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Facility Emergency Procedures

1. Make sure you know the location of all fire alarms, emergency exits, and emergency power stop buttons
2. EMERGENCY PROCEDURES AND EVACUATION ROUTES must be clear at all times, and occupants must know and understand these procedures and routes.

Location of Emergency Exits and Fire Alarms:

Locations of Emergency Stops:

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Facility Emergency Procedures

## IN CASE OF EMERGENCY TAKE LEADERSHIP AND STAY CALM

Assign 1 person to call the office to alert them of an emergency – if required, ask them to call 911, and define the problem (such as wound, stroke, seizure, choking, allergic reaction) give the office a cell phone number active in the room.

Ask the office to call in the emergency response team. if an epi-pen is required, notify the office to send it.

A basic first aid kit is in the room for use if you are trained.

Confirm that 911 has been called and been advised of the situation and location. Stay on the line in case they need more information.

Assign 1 person to get another teacher or staff member to help supervise the room.

Assign 1 person to remove all additional students and people out of the room if safe to do so. Consider if translation is required for the person in need. Determine if electrical power should be shut down in the room for safety.





Safely follow any additional instructions of staff or emergency responders.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

## Facility Fire Extinguishers

1. Know your Fire Safety Plan
2. If you see a fire, call for attention, get everyone out, pull the fire alarm.
3. Stay calm.
4. Only Use a fire extinguisher if trained. If using a fire extinguisher:
  - PULL THE PIN, AIM LOW AT BASE OF FIRE
  - SQUEEZE HANDLE, SWEEP SLOWLY AT BASE OF FIRE
  - STAY LOW TO AVOID HEAT AND SMOKE
5. Have the fire department check to make sure the fire is out.
6. Ventilate when fire is completely out.

Learn and know the types of fire extinguishers (see below):

CLASS A water		Ordinary Combustibles: paper, cloth, wood, rubber, many plastics.
CLASS B CO <sub>2</sub>		Flammable Liquids: oil, grease, gasoline, some paints, solvents etc.
CLASS C dry chemical		Electrical: wiring, fuse boxes, electrical equipment etc.
CLASS D special liquid or powder		Combustible Metals: magnesium, sodium.

# Facility First Aid

The immediate response to an emergency often involves First Aid. First Aid involves assisting an injured person until professional medical help can be provided.

The general action tips in the list below should be followed in an emergency. They do not replace the need to be properly trained in first aid. Your teacher will provide you with instructions in what to do in cases of emergencies.

1. Check the scene for dangers, (e.g., electrical shock hazards, chemical spills, hot objects, fire), stay calm and call out for help. Do not touch the victim until immediate dangers such as electrical current are removed.
2. Assist if asked by your teacher to keep the victim comfortable and calm.
3. Call the office for medical help if requested by the teacher.
4. Care for the victim by administering first aid according to your teacher's instructions.
5. Help keep people who are not needed away from the victim.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**



# Facility First Aid Kits

ALL INJURIES MUST BE REPORTED TO MAIN OFFICE

REPORT ANY USE OF FIRST AID KIT TO TEACHER TO ENSURE THAT ANY SUPPLIES THAT ARE USED ARE REPLACED

Suggested list (add items specific to your needs).

DATE CHECKED: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

ITEM	Number
St. Johns Ambulance First Aid Manual	
Masks	
Disposable latex gloves	
Pair of scissors	
Plastic Emesis basin	
Wooden splints	
Rolls of splint padding	
Adhesive strip bandages	
3"x3" sterile gauze pads	
4" compress bandages	
6" Tensor bandages	

	Triangular bandages	
	Safety Pins	
	Sterile gauze bandages	
	Sterile gauze field dressing	
	1 ½" width roll adhesive tape	
	Antiseptic swabs	
	Burn cream	
	Instant cold packs	
<b>AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR</b>		

# Facility Housekeeping

1. Everything has a proper storage location.  
If you don't know where it is, please ask.  
  
If you do know, put it back.
2. If it is broken, report it.  
If it doesn't work, report it.  
  
If it's broken or doesn't work, don't use it.
3. Dirt, dust, debris are harmful to your safety and health. Even if you didn't put it there, pick it up, clean it up, or move it aside.
4. If you spill or drop any fluid on the floor, tell the instructor and follow their cleaning instructions.
5. Never block fire exits, fire pull alarms, doorways, aisles, and electrical breakers of machine switches for any reason at any time.
6. Chemicals all have proper storage containers.  
Make sure you use them.  
Never mix chemicals.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Fall Protection

Studies of accidents show that most injuries are caused by falls. Observing a few simple rules will help to avoid most accidents of this type.

The points below give guidelines for preventing falls.

1. Walk, do not run.
2. Keep the floor clean and dry. A wet floor is slippery, so wipe up any spills immediately. Mark and avoid any spots that are still slippery until the floor can be thoroughly washed. Tell the instructor of any unsafe surfaces and warn others of slippery conditions.
3. Wear low-heeled comfortable shoes with rubber soles. These grip the floor well.
4. Keep floor mats flat to prevent stumbling. Wrinkled mats or ones with curled corners can cause falls.
5. Keep work areas and traffic lanes clear. Electrical cords should not extend across traffic lanes. Put mops and brooms away promptly. Never leave boxes or crates in the aisles.
6. Look where you are going at all times. Get assistance to carry items that can block your vision.
7. If given permission, use a stepladder, never a chair or table, if you need to reach something on a high shelf.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Hand Saws

1. Wear EYE PROTECTION whenever using hand saws.
2. Have a proper storage location for your saws to protect them from loss or damage.
3. Ensure the work area is clear of debris.
4. Keep your fingers away from the cutting area.
5. Use a saw handle that keeps your wrist in a natural position in the horizontal plane.
6. Select a saw with the proper shape, size and number of teeth for the stock being cut. and the desired finish.
7. Select an appropriate blade for the material being cut (e.g. wood, plastic, metal, etc).
8. Inspect the saw to ensure that the blade is sharp, clean and securely mounted prior to each use. Ensure the blade is in good condition; no nicks, cracks or missing teeth.
9. When using a hacksaw ensure the teeth are pointing forward.
10. Check the material for any defects such as knots and foreign objects such as nails, staples or screws; remove metal objects.
11. Ensure that the stock being cut is firmly secure.
12. Do not apply too much pressure on the blade as the blade may break. Do not twist when applying pressure.
13. Be aware of sawdust or other debris from cutting the material. Keep the work area clear of debris.
14. Never leave saws on the floor, hanging over edges, on ramps or hoists where they could be forgotten or create a tripping hazard.
15. After use, clean and RETURN THEM TO THEIR PROPER PLACE.
16. Protect the teeth of the saw when not in use.
17. Keep hacksaw blades clean and lightly oiled.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Hand Tools

Hand tools in poor condition are responsible for a vast number of injuries.

1. Wear EYE PROTECTION whenever using hand tools.
2. Never leave tools on the floor, hanging over edges, on ramps or hoists where they could be forgotten or cause a tripping hazard.
3. When tools become worn or damaged, they should be repaired or replaced immediately. Show your instructor.
4. Use hand tools that are sharp, clean and in good condition. Do not use blunt tools.
5. When using sharp-edged tools such as chisels, push the blade away from you, keeping both hands behind the edge so that if you slip you won't cut yourself.
6. Use tools only for their intended purpose. For example, screwdrivers should not be used as pry bars – if they bend under load they are no longer useful and may be dangerous to use for their intended purpose.
7. Handle SHARP-EDGED and POINTED TOOLS with care.
8. Always carry pointed tools by your side with the points and heavy ends DOWN. NEVER carry tools in your pockets.
9. If any tool breaks or malfunctions — report it to your instructor.
10. Have a proper storage location for your tools to protect them from loss or damage. After use, clean and RETURN THEM TO THEIR PROPER PLACE. Store tools and materials vertically, with the points and heavy end down.
11. NEVER STAND BEHIND anyone who is swinging a hammer. If you have to observe what is being done, stand off to the side out of the way of the hammerhead.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Hot Glue Gun

1. Do not operate the glue gun without the instructor's permission.
2. Before using, always inspect the hot glue gun for damage to the casing. In addition, assure the on/off switch (if equipped) is functioning properly and inspect the electrical cord and plug for fraying or other damage. If the hot glue gun fails your inspection, inform your teacher and remove it from use.
3. Always wear leather or heat resistant gloves and safety glasses or goggles when using a hot glue gun.
4. Keep the hot glue gun away from flammable materials and use in work areas that are clean and dry.
5. Use a wire or metal safety stand to hold the hot glue gun when you are not using it to glue items. Never lay a hot glue gun on its side.
6. Place a piece of paper or cardboard under the safety stand to catch hot glue drips and prevent damage to the underlying surface.
7. Do not touch the nozzle and avoid skin contact with hot glue. If accidents do occur, seek first aid and treat it as a burn.
8. Use the glue gun in well ventilated areas.
9. Never point a hot glue-gun nozzle at another person.
10. Unplug the glue gun and allow it to cool before changing the nozzle.
11. Do not tilt a hot glue-gun nozzle upwards or attempt to use a hot glue gun to glue overhead items.
12. Never leave a plugged-in hot glue gun unattended.
13. If hot glue contacts an eye, irrigate the eye with cold water and seek medical attention immediately.
14. Keep the nozzle clean to prevent glue building up, by wiping the excess glue away with a thick dry cloth or wad of newspaper

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# Hot Wire Foam Cutters

Hot wire cutters use low voltage electricity to heat a wire thus allowing it to melt its way through polystyrene foam. Because a low voltage is used there is no risk of electric shock. Neither is the wire capable of cutting your fingers, but it will burn them and anything else that you allow to come into contact with it.

1. Always wear leather or heat resistant gloves and safety glasses or goggles when using a foam cutter.
2. Do not operate the foam cutter without the instructor's permission.
3. Before using, always inspect the foam cutter for damage. In addition, assure the on/off switch (if equipped) is functioning properly and inspect the electrical cord and plug for fraying or other damage. If the hot glue gun fails your inspection, inform your teacher and remove it from use.
4. Keep the foam cutter away from flammable materials and use in work areas that are clean and dry.
5. Use the foam cutter and glue gun in well ventilated areas.
6. It is important to ensure that the equipment operates at the lowest temperature that allows free cutting.
7. Controlled electrical heating is desirable to obtain an even wire temperature. If smoke is given off, the wire is too hot.
8. Only use in well ventilated areas. If styrene fumes are inhaled, remove the person to fresh air and seek medical advice. If eyes water due to styrene fumes, flush with water and remove the person to fresh air.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**



# Internet Use

1. Do not download and install any program from the Internet without the permission of your instructor.
2. Do not make anyone's, including your, personal information available on the Internet, either through chat rooms, email, or the completion of forms and questionnaires.
3. Use school computer equipment for approved educational purposes only. The following are NOT legitimate uses:
  - a. downloading and installing software;
  - b. using computers for any activity that is inappropriate, racist, profane, criminal, harassing, or offensive to others;
  - c. copying software illegally or using unapproved software
  - d. copying without permission the intellectual or creative property of others
  - e. creating or spreading computer viruses
  - f. gaining unauthorized access to files belonging to another student or teacher
  - g. changing or interfering with the operating environment of a computer, including accessing or changing any elements of the operating or networking systems, or any other network that can be accessed through the LAN, WAN, or Internet.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Laser Cutting

Many operations in manufacturing involve different types of Computer Aided Machinery. Laser Cutting is one of these. Make sure you know how to handle the machine and conduct regular cleaning maintenance.

1. WEAR PERSONAL PROTECTIVE EQUIPMENT (PPE) INCLUDING SAFETY GLASSES, sturdy footwear, gloves, and respiratory and hearing protection as required. Always wear proper, close fitting clothing to cover arms and legs. Long hair must be tied back.
2. LASER cutters pose a fire hazard. To further increase risk, some of the materials engaged by the laser cutter can leave flammable debris and can ignite inside the cutter.
3. Do not use this machine unless a teacher has instructed you in its safe use and a safety passport has been issued.
4. Before beginning a cut, make sure the bed is clear of build material, debris, tools or other objects. Keep the interior of the LASER cutter clean and free of debris.
5. NEVER LEAVE THE LASER CUTTER when it is in operation.
6. Ensure the fume extraction system is on before beginning cutting operation.
7. Ensure material to be cut is on the approved list and poses no hazard. Where possible consult the manufacturer's Safety Data Sheets (SDS) for specific technical data and precautionary measures concerning any materials cut with this equipment. If in doubt, ask your teacher.
8. Refer to the cutting manual for appropriate engraving and cutting Power and Speed settings for varied materials

9. Consult laser cutter Project Log Book prior to starting the project. Make sure you have documented your project and are compliant with the manufacturer's maintenance procedures. If in doubt, ask your teacher.
10. Ensure all safety devices are in place before operating.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Lifting

1. Size up the load and check overall conditions. Check that there is enough space for movement, and that floors are clear. "Good housekeeping" ensures that you won't trip or stumble over an obstacle.
2. In the Province of Ontario, unassisted manual lifting is limited to 23 kg (51 pounds). Do not lift any load if it cannot be handled safely due to its size/shape
3. Make certain that your balance is good. Feet should be shoulder width apart, with one foot beside and the other foot behind the object that is to be lifted. A solid base of support is important while lifting. Holding your feet too close together will be unstable, too far apart will hinder movement.
4. Bend your knees and keep your back straight. Bend the knees; don't stoop. Keep the back straight, but not vertical. Tucking in the chin straightens the back.
5. Grip the load with the palms of your hands and your fingers. The palm grip is much more secure. Tuck in the chin again to make certain your back is straight before starting to lift.
6. Lift close to your body. You will be a stronger and more stable lifter if the object is held close to your body rather than at the end of your reach. Make sure you have a firm hold on the object you are lifting, and keep it balanced close to your body.
7. Lift with your legs. Your legs are many times stronger than your back muscles--let your strength work in your favour. Again, lower to the ground by bending your knees, not your back. Keeping your eyes focused upwards helps to keep your back straight. Use your body weight to start the load moving, and then lift by pushing up with the legs. This makes full use of the strongest set of muscles.
8. Keep the arms and elbows close to the body while lifting.
9. Carry the load close to the body. Don't twist your body while carrying the load. To change direction, shift your foot position and turn your whole body.
10. Watch where you are going!
11. To lower the object, bend the knees. Don't stoop. To deposit the load on a bench or shelf, place it on the edge and push it into position. Make sure your hands and feet are clear when placing the load.

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# Machine Guards

Guards are intended to prevent hair, clothing, hands, etc. from becoming entangled with parts of the machine, or to protect you from flying material, which could result in injuries.

1. Always wear EYE PROTECTION when using power tools and machines. Long hair must be contained in a cap or net. Don't wear loose clothing or jewelry.
2. BEFORE OPERATING ANY MACHINE FOR THE FIRST TIME, ask your instructor to explain the function of the guards and to demonstrate them in operation.
3. Certain types of guards are adjustable. Make sure that the guards are adjusted to give maximum protection.
4. Machines with LOOSE OR POORLY SECURED GUARDS must not be operated until guards have been properly adjusted.
5. NEVER OPERATE ANY MACHINE WITH THE GUARDS REMOVED OR DAMAGED. Inform your supervisor or instructor of the situation.
6. ALWAYS CHECK YOUR MACHINE GUARDS to make sure they are in place and operating, before using the machine. Re-check the guards after every set-up of the machine.
7. If you have occasion to remove a machine guard for any purpose, ensure that the MACHINE IS SECURELY "LOCKED OUT" to prevent its being activated while the guard is out of place. Your instructor must supervise this operation.
8. When you replace a guard, check its performance before using the machine.
9. Report all UNGUARDED AND INADEQUATELY GUARDED equipment promptly to your instructor.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Mitre Saw

1. Wear Personal Protective Equipment (PPE) such as safety glasses, safety goggles, face shields, gloves and proper clothing as appropriate. No loose clothing, long hair or jewelry is allowed in the shop.
2. Do not operate the mitre saw without the instructor's permission.
3. Follow the manufacturer's instructions for changing tool accessories.
4. Clamp all material firmly and properly.
5. Ensure you are aware of the blade path before you make your cut.
6. When you cut short pieces make sure your left hand is clear of the blade path.
7. Watch for kick back when cutting short pieces.
8. Long stock pieces should be supported safely.
9. Students who are left handed must use their right hand for cutting operations.
10. When making angle cuts ensure the blade has adequate clearances.
11. Your body position should always be left of the blade assembly when operating this saw.
12. When using a sliding mitre saw, ensure the blade clears stock sizes before cutting operations.
13. Make sure all guards are in place and properly adjusted.
14. Always reference the owner's manual before operating and servicing equipment.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Modeling Knives

1. Determine the right tool for the job - there are many different types of blades and utility knives for different purposes. Use the right knife for the job you are doing.
2. Never use a knife for any other purposes than cutting (e.g., pry or tightening screws).
3. Always use a sharp blade and pick up knives by the handle only.
4. Always wear safety glasses - a blade may break and fly away from the work surface.
5. Use protective cut-resistant gloves when working with modeling knives.
6. Do not grab for a falling knife. When a knife falls, jump back out of the way.
7. Always carry a knife with the tip pointing downward and with the cutting edge turned away from your body.
8. Use a cutting board/matt at all times, never cut on a metal surface.
9. Securely grip the handle of the knife so that it does not slip out of your hands.
10. Firmly hold the material that you are cutting.
11. Keep your fingers as far away from the blade as possible, but be sure to maintain a safe grasp of the material being cut.
12. Avoid using excessive force and trying to make deep cuts. Make several passes when cutting.
13. Keep the work area clean and organized. Remove the scraps created from cutting.
14. Use a straight edge when cutting a straight line.
15. As you will need to pull the knife towards you for control and strength, pull in a direction that is to the side of your body.

16. Make sure that your hand is not holding your straight edge at one point. Spread your hand out for more stability. Your hand should never be in the path of the blade.
17. When making a cut on a 3-dimensional piece make sure to use a clamp to hold your work in place.
18. When not in use, retract a blade on retractable knives or fit the guard if supplied. A knife with no guard should be placed in a way that it cannot roll and that the blade is not pointing at any one.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**



## Paints, Sealants and Finishes

1. Always read and follow manufacturer's use and safety instructions.
2. Be sure to read Safety Data Sheets (SDS) and instruction manuals of the product and understand the characteristics well (particularly regarding safety).
3. Wear approved eye protection.
4. Wear a respirator when spraying finishing materials.
5. Avoid breathing fumes from toxic materials. Ensure there is proper ventilation.
6. Wear rubber or vinyl gloves to minimize risk of skin irritations when using a cloth or a pad to apply solvents, bleaches, stains, and finishes and when cleaning brushes.
7. Wash your hands after using any finishing materials.
8. Do all finishing in a well-ventilated area specifically designed for finishing.
9. Make sure the proper types of fire extinguishers are available in the room.
10. Keep the entire area clean and free from spills.
11. Never leave opened finishing materials unattended.
12. Never use tools or machines that can cause sparks or start a fire in the finishing area.
13. Many solvents are extremely flammable. Keep all solvents away from sources of heat, sparks, and fires.
14. Store paint and solvents in their original containers. If, for some reason, this is not possible, be sure the new containers clearly labeled.
15. Spillages of any type should be attended to immediately. Water-based products can be washed away with water before they dry, provided it is permissible. An alternative method is to soak up the spillage with an inert material, which can be placed in a suitably closed container for disposal.
16. All adhesives and sealants should be stored in dry conditions and reasonable temperatures.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Power Tools

1. Wear Personal Protective Equipment (PPE) such as safety glasses, safety goggles, face shields, gloves and proper clothing as appropriate.
2. Do not operate power tools without the instructor's permission.
3. Do not wear loose clothing or jewelry when operating power tools. Long hair must be tied back.
4. Follow the manufacturer's instructions for changing tool accessories.
5. Before using any power tool, examine for obvious damage. If there is damage, report it to your teacher. Never operate a faulty power tool.
6. Keep guards in place and follow lockout/tag-out procedures.
7. Keep fingers, hands, clothing and hair, etc., well clear of any rotating tools, bits, etc.
8. Securely clamp your project to a stable work surface to avoid having hands and fingers close to cutting tools.
9. When using battery operated power tools, fit the battery only after all adjustments have been made and after use, return the battery for recharging.
10. Know the purpose of each tool you use and use each for the specific task it was designed to do.
11. Always use two hands on the tool when operating. Clamp the workpiece to a solid surface; do not attempt to hold the workpiece with hand or foot.

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## Power Tools (Cont'd)

17. Unless it's designed for it, never operate power tools where there are flammable vapors, dust, liquids or gases present. Some power tools create sparks, which may ignite the dust or fumes.
18. Electrical cords must be in good condition; report any broken, damaged or bare cords. Keep cords away from heat, oil, and sharp edges
19. All power tools must be effectively grounded and/or be of the double insulated type.
20. If the tool is equipped with a three-prong plug, it should be plugged into a three-hole electrical receptacle. Never remove the third prong.
21. Never use power tools in damp or wet locations or if the worker is perspiring. Moisture helps electricity flow more easily through the body.
22. Rubber gloves and footwear are recommended when working outdoors in damp conditions.
23. Never carry a tool by its cord or pull the cord to disconnect it from a receptacle.
24. Never carry a plug-in tool with your finger on the switch.
25. Unplug tools before replacing any broken, dull or damaged bits or blades.
26. Be careful not to overreach. Keep your balance and proper footing when working with power tools.
27. When you have completed an operation with a power tool, switch it off and lay the tool down in a safe manner after it stops. Keep the rotating blade or bit away from your legs and body.
28. Keep the floor around the work area clean.
29. Be sure the power switch for a portable tool is "off" before plugging it in.
30. Always reference the owner's manual before operating and servicing equipment.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Scroll Saw

1. Wear Personal Protective Equipment (PPE) such as safety glasses, safety goggles, face shields, gloves and proper clothing as appropriate. No loose clothing, long hair or jewelry is allowed in the shop.
2. Do not operate the Scroll Saw without the instructor's permission.
3. Follow the manufacturer's instructions for changing tool accessories.
4. Be aware of the position of the on/off switches and emergency STOP button.
5. Ensure that the correct blade is being used for the type and size of material. Use the correct speeds for the material being cut (variable speed machines).
6. When pushing the work through, do not force the piece. Keep fingers clear of the blade path. Use both hands and keep fingers at least 10 cm. (4 in.) from the blade at all times.
7. Never pull or force a jammed piece through the equipment. Shut the power off and then carefully dislodge the piece.
8. If the blade is dull, change it. (Make sure the machine is locked out). Make all adjustments with the power off.
9. Make sure the hold down is resting on the workpiece.
10. Plan your cuts carefully. Saw curves gradually. Sudden twists will cause the blade to bind or break. Use relief cuts if necessary. Always make a short cut first. Avoid backing out of cuts with the power on. Backing out of a cut may cause the blade to bind
11. If the blade breaks, turn the power off immediately and step back. Inform the instructor immediately.
12. Remove scrap pieces from the table only after the blade has stopped.
13. Always operate the saw from the front, never from the side. Keep your hands beside or behind the blade; never in front. Do not leave the scroll saw until the blade has stopped.
14. Always reference the owner's manual before operating and servicing equipment.

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# Staple Gun

1. Wear Personal Protective Equipment (PPE) such as safety glasses, safety goggles, face shields, gloves and proper clothing as appropriate. No loose clothing, long hair or jewelry is allowed in the shop.
2. Do not operate the staple gun without the instructor's permission.
3. Follow the manufacturer's instructions for changing tool accessories.
4. Examine the item you are about to staple and compare it to the width and depth of the staples you plan to use.
5. Stapling will be more successful if you have a firm, stationary surface underneath the workpiece.
6. Use clamps to secure and support the work piece to a steady platform (or workbench).
7. Keep your finger off the trigger when not firing staples or when carrying around. The centre of gravity at the trigger makes it easy to accidentally fire the staple gun.
8. NEVER use a staple gun if the trigger does not operate properly. Report this to your teacher.
9. Be careful to always keep your hands and feet away from the nose of the staple gun when firing staples.
10. Fire staples into appropriate surfaces ONLY. Do not fire staples on top of another – they may ricochet.
11. Never rest the staple gun against any body part or try to climb a ladder with the staple gun cradled against your body.
12. Never point a staple gun at anyone.
13. Empty out unused staples before clearing a staple jam.
14. Return this tool to the appropriate storage cupboard.
15. Always reference the owner's manual before operating and servicing equipment.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# Soldering Safety

1. Use appropriate PPE (personal protection equipment) at all times when soldering or desoldering. PPE includes eye protection, (use at all times), skin protection, and heat protection, as required under safe operating procedures.
2. Do not operate the soldering iron without the instructor's permission.
3. Follow the manufacturer's instructions for changing tool accessories.
4. Ensure adequate ventilation. Solder may contain lead. DO NOT breathe fumes from soldering or desoldering operations. Wash hands afterwards.
5. Clamp work securely while performing soldering or desoldering. Use a vice or other approved clamping systems to keep your hands free to work.
6. Use heat sinks to protect circuit components. Do not apply excessive heat or apply heat for excessive lengths of time.
7. Beware of hot soldering irons and components. Make sure others are aware of hot tools. Switch off and/or unplug soldering tools when not in use. Allow to cool before storing.
8. Keep the area clean around the workplace at all times.
9. When working with used circuit boards, make sure the desolder or solder area is clean and free of dust or grease before applying heat.
10. Be aware of the location of your soldering iron or pencil while it is hot, or cooling. Make sure you place the hot iron in an appropriate holder to prevent heat or fire damage.
11. Never directly hand a soldering iron to someone else, place it in the holder and they can take it from there.
12. When soldering wire connections, make sure the wires are tightly connected. Use appropriate covering like heat shrink tubing or twist-on connectors to protect the splice. Do not use wires with melted insulation or exposed conductors.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# 3D Printer

1. Always wear proper PPE when operating the 3D Printer. I.e. safety glasses, goggles, gloves, or lab coats.
2. Be sure to read and understand the owner's manual before operating.
3. Limit equipment access to trained or authorized personnel.
4. Before beginning a 3D print, make sure the bed is clear of build material, debris, tools or other objects.
5. Use enclosures for 3D printers and proper ventilation to capture chemical emissions.
6. There is a slight smell from ABS when it is being extruded. A well-ventilated room is recommended; however, when printing, keep the printer away from any drafts as this can affect the warping of ABS prints.
7. Using printer filament with lower emissions is recommended.
8. Never reach inside the 3D printer while it is in operation. In addition to the risk of burn, injury from moving mechanical parts or electric shock.
9. Never touch the extruder nozzles. They reach temperatures in excess of 200 degrees Celsius and may be hot enough to cause a serious burn during operation, or when heating up and cooling down. Use needle nose pliers to remove bits of debris from the nozzles.
10. Always refer to the owner's manual for instructions on adding or removing filament.
11. Reduce time spent near the printer while it is running to limit exposure to fumes.
12. Use caution when removing parts from the build platform as the extruder and build platform may be hot.
13. Use only the power adapter supplied with the printer, or the printer may be damaged, with a risk of fire.
14. Consult the Safety Data Sheets (SDSs) for safety information regarding the plastic(s) you will be using.
15. Always reference the owner's manual before operating and servicing equipment.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# WHMIS 2015 Regulations

- The acronym WHMIS stands for Workplace Hazardous Materials Information System
- Canada aligned the Workplace Hazardous Materials Information System (WHMIS) from 1988 with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) in 2015.
- Suppliers and employers must use and follow the WHMIS 2015 requirements for labels and safety data sheets (SDSs) for hazardous products sold, distributed, or imported into Canada.
- SDS stands for Safety Data Sheets
- SDS is a printout on paper that identifies how to handle, store, use, health effects if exposed, emergency procedures, and protective measures
- Employers will be required to make sure that all hazardous products (as defined by the Hazardous Products Regulations) have an up-to-date SDS when it enters the workplace.
- The SDSs must be readily available to the workers who are exposed to the hazardous product, and to the health and safety committee or representative.
- A label will be required to be updated when the supplier becomes aware of any "significant new data". According to the regulation, the definition of significant new data is:
- "New data regarding the hazard presented by a hazardous product that changes its classification in a category or subcategory of a hazard class, or result in its classification in another hazard class, or change the ways to protect against the hazard presented by the hazardous product." (Source: Canada Gazette, Part II, Hazardous Products Regulations, Section 5.12 (1))
- Labels will be required to be updated within 180 days of the supplier being aware of the new information. If you purchase a product within this 180-day time period, the supplier must inform you of the changes, and the date they became available, in writing

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**



# WHMIS 2015 Labels

Supplier labels must be attached to the controlled product container which has detailed information about the product. Legislation states that 10 kg or more of a controlled product or hazardous material from a supplier must contain the following information:

- The hatched border that was required under WHMIS 1988 is not required under WHMIS 2015. However, it is also not forbidden to use the hatched border, so you may see it on a WHMIS 2015 label.
- Labels must be in English and French. They may be bilingual (as one label) or be presented as two labels (one each in English and French).
- The pictogram, signal word, and hazard statement are to be grouped together,
- To be clearly and prominently displayed on the container,
- To be easy to read (e.g., you can see it easily without using any item except corrective glasses), and
- To be in contrast with other information on the product or container.
- Labels will be required to be updated within 180 days of the supplier being aware of the new information. If you purchase a product within this 180-day time period, the supplier must inform you of the changes, and the date they became available, in writing.
- Product identifier – the brand name, chemical name, common name, generic name, or trade name of the hazardous product.
- Initial supplier identifier – the name, address, and telephone number of either the Canadian manufacturer or the Canadian importer\*.
- Pictogram(s) – hazard symbol within a red "square set on one of its points".
- Signal word – a word used to alert the reader to a potential hazard and to indicate the severity of the hazard.
- Hazard statement(s) – standardized phrases which describe the nature of the hazard posed by a hazardous product.

**AT ALL TIMES – IF IN DOUBT, STOP! ASK YOUR INSTRUCTOR**

# SDS SAFETY LABELS

## ***GENERIC SAFETY DATA SHEETS FOR PERSONAL ENHANCEMENT PRODUCTS PROTECTED BY TRADE SECRET LAWS (SDS)***

### **MATERIAL IDENTIFICATION**

---

TRADE NAME/MATERIAL NAME

---

PRODUCT USE

---

OTHER NAMES:

---

MANUFACTURER'S/SUPPLIER'S NAME:

---

ADDRESS:

---

EMERGENCY TELEPHONE:

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FIRST AID PROCEDURE

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

# WHMIS REGULATIONS

- The acronym WHMIS stands for *Workplace Hazardous Materials Information System*
- Canada aligned the Workplace Hazardous Materials Information System (WHMIS) from 1988 with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) in 2015.
- Suppliers and employers must use and follow the WHMIS 2015 requirements for labels and safety data sheets (SDSs) for hazardous products sold, distributed, or imported into Canada.
- SDS stands for *Safety Data Sheets*
- SDS is a printout on paper that identifies how to handle, store, use, health effects if exposed, emergency procedures, and protective measures
- Employers will be required to make sure that all hazardous products (as defined by the *Hazardous Products Regulations* have an up-to-date SDS when it enters the workplace.
- The SDSs must be readily available to the workers who are exposed to the hazardous product, and to the health and safety committee or representative.
- A label will be required to be updated when the supplier becomes aware of any "significant new data". According to the regulation, the definition of significant new data is:
  - "New data regarding the hazard presented by a hazardous product that changes its classification in a category or subcategory of a hazard class, or result in its classification in another hazard class, or change the ways to protect against the hazard presented by the hazardous product." (Source: *Canada Gazette*, Part II, Hazardous Products Regulations, Section 5.12 (1))
- Labels will be required to be updated within 180 days of the supplier being aware of the new information. If you purchase a product within this 180-day time period, the supplier must inform you of the changes, and the date they became available, in writing.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

# WHMIS LABELS

**Supplier labels** must be attached to the controlled product container which has detailed information about the product. Legislation states that 10 kg or more of a controlled product or hazardous material from a supplier must contain the following information:

- The hatched border that was required under WHMIS 1988 is not required under WHMIS 2015. However, it is also not forbidden to use the hatched border, so you may see it on a WHMIS 2015 label.
- Labels must be in English and French. They may be bilingual (as one label) or be presented as two labels (one each in English and French).
- The pictogram, signal word, and hazard statement are to be grouped together,
- To be clearly and prominently displayed on the container,
- To be easy to read (e.g., you can see it easily without using any item except corrective glasses), and
- To be in contrast with other information on the product or container.
- Labels will be required to be updated within 180 days of the supplier being aware of the new information. If you purchase a product within this 180-day time period, the supplier must inform you of the changes, and the date they became available, in writing.
- **Product identifier** – the brand name, chemical name, common name, generic name, or trade name of the hazardous product.
- **Initial supplier identifier** – the name, address, and telephone number of either the Canadian manufacturer or the Canadian importer\*.
- **Pictogram(s)** – hazard symbol within a red "square set on one of its points".
- **Signal word** – a word used to alert the reader to a potential hazard and to indicate the severity of the hazard.
- **Hazard statement(s)** – standardized phrases which describe the nature of the hazard posed by a hazardous product.
- **Precautionary statement(s)** – standardized phrases that describe measures to be taken to minimize or prevent adverse effects resulting from exposure to a hazardous product or resulting from improper handling or storage of a hazardous product.
- **Supplemental label information** – some supplemental label information is required based on the classification of the product. For example, the label for a mixture containing

ingredients with unknown toxicity in amounts higher than or equal to 1% must include a statement indicating the percent of the ingredient or ingredients with unknown toxicity. Labels may also include supplementary information about precautionary actions, hazards not yet included in the GHS, physical state, or route of exposure. This information must not contradict or detract from the standardized information.

**In addition to this and if the container has more than 100 milliliters the following information must be on the label:**

- Risk time factors
- Precautionary measures while using or being exposed to the product/chemical
- First aid measures to address immediate injuries and not progressive illnesses

**Workplace labels** must be identified on a container that is not from the supplier, and must contain the following information:

- Product name (matching the SDS product name).
- Safe handling precautions may include pictograms or other supplier label information.
- A reference to the SDS (if available).
- First aid measures

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

# Product K1 / Produit K1



## Danger

Fatal if swallowed.  
Causes skin irritation.

### Precautions:

Wear protective gloves.  
Wash hands thoroughly after handling.  
Do not eat, drink or smoke when using this product.

Store locked up.  
Dispose of contents/containers in accordance with local regulations.

IF ON SKIN: Wash with plenty of water.  
If skin irritation occurs: Get medical advice or attention.  
Take off contaminated clothing and wash it before reuse.  
IF SWALLOWED: Immediately call a POISON CENTRE or doctor.  
Rinse mouth.

## Danger

Mortel en cas d'ingestion.  
Provoque une irritation cutanée.

### Conseils :

Porter des gants de protection.  
Se laver les mains soigneusement après manipulation.  
Ne pas manger, boire ou fumer en manipulant ce produit.

Garder sous clef.  
Éliminer le contenu/récipient conformément aux règlements locaux en vigueur.

EN CAS DE CONTACT AVEC LA PEAU : Laver abondamment à l'eau.  
En cas d'irritation cutanée : Demander un avis médical/consulter un médecin.  
Enlever les vêtements contaminés et les laver avant réutilisation.  
EN CAS D'INGESTION : Appeler immédiatement un CENTRE ANTIPOISON ou un médecin.  
Rincer la bouche.











Compagnie XYZ, 123 rue Machin St, Mytown, ON, N0N 0N0 (123) 456-7890

This is an example of an updated 2015 supplier label using the Globally Harmonized System.

More information can be found on the Government of Canada, Canadian Centre for Occupational Health and Safety Website. See the link below.

[https://www.ccohs.ca/oshanswers/chemicals/whmis\\_ghs/pictograms.html](https://www.ccohs.ca/oshanswers/chemicals/whmis_ghs/pictograms.html)

## WHMIS 2015 Pictograms

	<b>Exploding bomb</b> (for explosion or reactivity hazards)		<b>Flame</b> (for fire hazards)		<b>Flame over circle</b> (for oxidizing hazards)
	<b>Gas cylinder</b> (for gases under pressure)		<b>Corrosion</b> (for corrosive damage to metals, as well as skin, eyes)		<b>Skull and Crossbones</b> (can cause death or toxicity with short exposure to small amounts)
	<b>Health hazard</b> (may cause or suspected of causing serious health effects)		<b>Exclamation mark</b> (may cause less serious health effects or damage the ozone layer*)		<b>Environment*</b> (may cause damage to the aquatic environment)
	<b>Biohazardous Infectious Materials</b> (for organisms or toxins that can cause diseases in people or animals)				

\* The GHS system also defines an Environmental hazards group. This group (and its classes) was not adopted in WHMIS 2015. However, you may see the environmental classes listed on labels and Safety Data Sheets (SDSs). Including information about environmental hazards is allowed by WHMIS 2015.

## WHMIS 2015 Pictograms



The **flame** pictogram is used for the following classes and categories:

- Flammable gasses (Category 1)
- Flammable aerosols (Category 1 and 2)
- Flammable liquids (Category 1, 2 and 3)
- Flammable solids (Category 1 and 2)
- Pyrophoric liquids (Category 1)
- Pyrophoric solids (Category 1)
- Pyrophoric gasses (Category 1)
- Self-heating substances and mixtures (Category 1 and 2)
- Substances and mixtures which, in contact with water, emit flammable gasses (Category 1, 2 and 3)
- Self-reactive substances and mixtures (Types B\*, C, D, E and F)
- Organic peroxides (Types B\*, C, D, E and F)



The **flame over circle** pictogram is used for the following classes and categories:

- Oxidizing gases (Category 1)
- Oxidizing liquids (Category 1, 2 and 3)
- Oxidizing solids (Category 1, 2 and 3)



## WHMIS 2015 Pictograms



The **gas cylinder** pictogram is used for the following classes and categories:

- Gases under pressure (Compressed gas, Liquefied gas, Refrigerated liquefied gas, and Dissolved gas)



The **corrosion** pictogram is used for the following classes and categories:

- Corrosive to metals (Category 1)
- Skin corrosion/irritation – Skin corrosion (Category 1, 1A, 1B and 1C)
- Serious eye damage/eye irritation – Serious eye damage (Category 1)

## WHMIS 2015 Pictograms



The **exploding bomb** pictogram is used for the following classes and categories:

- Self-reactive substances and mixtures (Types A and B\*)
- Organic peroxides (Types A and B\*)



The **skull and crossbones** pictogram are used for the following classes and categories:

- Acute toxicity –
- Oral (Category 1, 2 and 3)
- Dermal (Category 1, 2 and 3)
- Inhalation (Category 1, 2 and 3)

## WHMIS 2015 Pictograms



The **health hazard** pictogram is used for the following classes and categories:

- Respiratory or skin sensitization – Respiratory sensitizer (Category 1, 1A and 1B)
- Germ cell mutagenicity (Category 1, 1A, 1B and 2)
- Carcinogenicity (Category 1, 1A, 1B, and 2)
- Reproductive toxicity (Category 1, 1A, 1B and 2)
- Specific Target Organ Toxicity – Single exposure (Category 1 and 2)
- Specific Target Organ Toxicity – Repeated exposure (Category 1 and 2)
- Aspiration hazard (Category 1)



The **exclamation mark** pictogram is used for the following classes and categories:

- Acute toxicity – Oral, Dermal, Inhalation (Category 4)
- Skin corrosion/irritation – Skin irritation (Category 2)
- Serious eye damage/eye irritation – Eye irritation (Category 2 and 2A)
- Respiratory or skin sensitization – Skin sensitizer (Category 1, 1A and 1B)
- Specific target organ toxicity – Single exposure (Category 3)



The **biohazardous infectious** materials pictogram is used for the following classes and categories:






















- Biohazardous Infectious Materials (Category 1)



**Environment.** May cause damage to the aquatic environment.

The Global Harmonized System has defined an environmental hazard group. This group was not adopted in WHMIS 2015; However, you may see this symbol on labels and Safety Data Sheets, and WHMIS allows this, so we are including it in this document.

WHMIS Chemical Hazards Pictograms 2015

WHMIS 1988 Hazard Class	WHMIS 1988 Symbols	WHMIS 2015 Symbols	WHMIS 2015 Hazard Class
A			Gases Under Pressure
B1 to B6			Flammables, Self-Heating, Emit Flammable Gases, Pyrophoric Gases, Liquids & Solids Organic Peroxides
C			Oxidizing Gases, Liquids, Solids
D1		 	Acute Toxicity - Oral, Dermal, Inhalation
D2		 	Eye Irritation, Skin Irritation Skin/Respiratory Sensitization, Carcinogenicity Mutagenicity Reproductive Hazards
D3			Biohazardous Infectious Materials
E			Skin/Eye Corrosion Corrosive to Metals
F		 	Self-Reactive Substances Organic Peroxides
N/A	N/A		Explosive Substances (Explosives are still covered under WHMIS exclusions for now)
N/A	N/A		Aspiration, STOT (Single Exposure, Repeated Exposure)
N/A	N/A	N/A	Combustible Dusts
N/A	N/A	N/A	Simple Asphyxiants
N/A	N/A	Use appropriate symbol	Physical Hazards Not Otherwise Classified, Health Hazards Not Otherwise Classified

# WHMIS 1988 VS. WHMIS 2015

## WHMIS 1988

Controlled products regulations

Controlled products

6 hazard classes, 3 divisions

Label:

- Hatched border
- No standardized phrases

Symbol in black circle

Material Safety Data Sheets ( MSDS )

- Must be updated every 3 years
- 9 sections

## WHMIS 2015

Hazardous products regulations

Hazardous products

30+ hazard classes, multiple categories

Label:

- Solid border
- Standardized phrases

Pictograms: symbol in a red square on its point ( Diamond )

Safety Data Sheets ( SDS )

Must be updated when new information is available

16 sections

## SECTION 3: SAFETY ASSIGNMENTS AND TESTS

### SECTION OVERVIEW

This section contains sample tests and assignments related to safety. They are designed as samples that can be used as written or edited for your purposes. They can be used for evaluation of the safety expectations of the course, or as tools to assess the student's knowledge and understanding of safety. It is recommended that all teachers keep a record of all test or assignment results and/or passports (next section) as verification of each student's understanding of safe concepts and practices.

The equipment and safety practices in individual facilities will determine how a teacher can best use these resources in the teaching of safe work practices.

### NOTE:

All materials within this document are to be considered as suggestions and recommendations only. These are not legal documents and are not to be considered as legal requirements or as official policy. OCTE or the individual contributors makes no claim to the accuracy or the completeness of the enclosed documents and accepts no responsibility for any damages pertaining to their use. Users of this document should not assume all warnings and precautionary measures are contained herein, that additional information or measures are not required, or that local by-laws, regulations or Board policies are explicitly included.

Please see specific equipment manuals for further safety information, as well as local, Board and school policies and regulations.

## ROOM INVENTORY AND SAFETY IDENTIFICATION

Use hand drafting or Computer Aided Drafting tools and equipment to draw an accurate, scaled floor plan of your shop and identify the location of the following. Show the work zones around major equipment. Check off each item to ensure you have covered everything:

Entrance/exit doors	
Safety exit	
Fire extinguishers	
Fire alarm	
First aid kit	
Power shut-off or emergency "stop" buttons	
Electrical outlets	
Work tables	
Computer workstations	
3D Printer	
Material storage cabinet	
Hand and power tools storage cabinet	
Flammable storage cabinet	
Band saw	
Belt and disc sander	
Drill press	



	Foam cutter	
	Mitre saw	
	Radial arm saw	
	Router	
	Scroll saw	
	Layout tables	
	Cutting boards	
	Plastic forming equipment	
	Soldering tools	
	Power tools	
	Dremel tools	
	Hand tools	
<b>NOTE: this list can be revised and edited to suit individual labs/shops.</b>		

# MACHINE EQUIPMENT AND HAND TOOLS SAFETY POSTER ASSIGNMENT

Each piece of equipment and hand tool that we use in technological design has important safety implications that we need to learn and understand before we can begin using them. The purpose of this activity is to research each piece of equipment and hand tool and create an 8 ½ x

11 safety guideline posters specific to that equipment/tool. You must include the following information on all safety information sheets:

1. Name of equipment/hand tool (ex. Exacto knife)
2. Function of equipment/hand tool (ex. Cuts foam board, mat board, cork)
3. List five safety guidelines that need to be remembered and followed while using the hand tool
4. Outline the correct operating procedures/how to properly hold and use the tool

You are developing important mandatory material that will be used and referenced by you throughout the semester. The information sheets must be precise and easy to follow. Material reference information such as equipment manuals provided by the manufacturer can be one of your sources as well as the Internet and the training you received through teacher demonstrations.

## Equipment/Hand Tool list: (ex.)

Band saw  
Belt sander  
Dremel  
Drill press  
Drills (portable)  
Hand saws  
Hand tools  
Hot glue gun  
Hot wire foam cutter  
Modeling knives (ex. Exacto)  
Power Tools  
Scroll saw  
Staple gun

## Due Date (ex.)

Tuesday March 10<sup>th</sup>

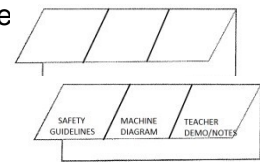
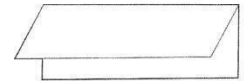
NOTE: this list can be revised and edited to suit individual labs/shops.

# MACHINE EQUIPMENT AND HAND TOOLS SAFETY FOLDABLE

Each piece of equipment and hand tool that we use in technological design has important safety implications that we need to learn and understand before we can begin using them.

The purpose of this activity is to create an individual safety foldable for each piece of equipment or tool that you will be required to use throughout the semester. You will make the foldable as followed:

1. Take an 8 ½ x 11 paper and fold in half horizontally along the short side.
2. Take a pair of scissors and cut one side of your foldable into three
3. Label the three flaps accordingly:
  - a. Safety Guidelines
  - b. Machine Diagram
  - c. Teacher Demonstration/Notes
4. Write the name of the machine/equipment/tool across the top of the foldable. **MAKE IT VISIBLE!** (ex. BAND SAW)
5. Under the SAFETY GUIDELINES tab. Write down ten safety guidelines that need to be remembered and followed while using this specific tool.
6. Under the MACHINE DIAGRAM paste in a picture of the machine/equipment/tool. Label and name all of the parts. (**\*\*\*NOTE\*\*\*** Teachers will need to take pictures of their machines/equipment/tools and print off a copy for each student at an adequate size to fit the middle tab of the foldable)
7. Under the TEACHER DEMO/NOTES outline the correct operating procedures/how to properly hold and use the tool as demonstrated by your instructor.



You are developing important mandatory material that will be used and referenced by you throughout the semester. The information sheets must be precise and easy to follow. Material reference information such as equipment manuals provided by the manufacturer can be one of your sources as well as the Internet and the training you received through teacher demonstrations.

Equipment/Hand Tool list: (ex.)

Band saw  
 Belt sander  
 Dremel  
 Drill press  
 Drills (portable)  
 Hand saws  
 Hand tools  
 Hot glue gun  
 Hot wire foam cutter  
 Modeling knives (ex. Exacto)  
 Power Tools  
 Scroll saw  
 Staple gun

Due Date (ex.)

Tuesday March 10<sup>th</sup>

NOTE: this list can be revised and edited to suit individual labs/shops.

## STUDENT SAFETY WORKSHEET

For this assignment, you will need a computer and Internet access. Copy each link and then paste into your browser. Then answer the questions. Once completed, print and submit to your teacher.

The work is due: \_\_\_\_\_

1. Visit the following link: <http://www.labour.gov.on.ca/english/hs/>  
Read, review and provide a brief explanation of this link.
2. Visit the following link: <http://www.labour.gov.on.ca/english/hs/pubs/ohsa/index.php>  
You may have to follow links in the table of contents to find more information.

Read and answer the following questions:

- a. What are the rights of workers?
  - b. What are the duties and responsibilities of employers and other persons?
  - c. What are the general duties of supervisors?
  - d. What are the duties of owners?
- 
3. Visit the following link:  
<http://news.ontario.ca/mol/en/2011/04/safety-blitz-to-focus-on-young-workers.html>  
(Note: *Archived, but the link still works.*)  
Read and list two health and safety facts for young workers.

# REPETITIVE STRAIN INJURIES SAFETY ASSIGNMENT

With a partner, research different ways to prevent and treat repetitive strain injuries.

Use a search engine to find information on various exercises and methods of preventing and treating repetitive strain injuries. Complete the following:

1. Explain how someone might develop a repetitive strain injury.
2. List 3 ways to prevent repetitive strain injuries in the computer lab.
3. Find 3 exercises to treat repetitive strain injuries.
4. Choose one exercise to reduce or prevent repetitive strain injuries that you will explain and demonstrate to the class.

### General Safety

1. Report any \_\_\_\_\_ working condition to the teacher.
2. Students never enter the room unless the teacher is present.
3. Always ask permission before using any machine or tool.
4. Keep the work area clean and clear from debris or tools not being used.
5. Do not let power cords be a \_\_\_\_\_ hazard.

### Body and Mind

6. Dress properly: remove sweaters, coats, roll up sleeves, tuck in shirts and tuck in baggy pant legs.
7. No long necklaces, loose bracelets, and all rings.
8. Remove or tape over any hand or forearm piercing.
9. Wear appropriate \_\_\_\_\_ protection i.e. safety glasses, goggles or shield.
10. Keep behavior appropriate for a classroom: no running, pushing, fighting, or throwing items.
11. Keep long loose \_\_\_\_\_ tied back or stuffed into a hat.

### Health and First Aid

12. Report all \_\_\_\_\_ to the teacher immediately, regardless of how minor they are. Never leave the class after an injury without the teacher's consent.
13. Never \_\_\_\_\_ in the construction lab, you may be ingesting unhealthy particles or debris. And the food may spoil or damage machines and projects.
14. No \_\_\_\_\_ bottles or pop cans in the lab. Plastic non-spill bottles or cups may be used to hold water only (sticky or carbonated drinks not allowed).
15. Inform the teacher immediately (at the beginning of the course) of any sight or hearing impairments or of allergies to dust and chemicals.
16. Know the \_\_\_\_\_ of the nearest first aid station.
17. Do not operate the machinery or use hand tools while under the influence of medicine, see the teacher for permission.

# SAFETY POLICY AND PROCEDURES

## SAFETY BOOKLET TEST (Cont'd)

### Machine and Tool Safety

1. BEFORE ATTEMPTING ANY WORK OR USING ANY TOOL OR MACHINE make sure you have received complete instructions and have been checked out on the proper procedures by your instructor.
2. Make sure blades are \_\_\_\_\_ and in good condition.
3. ASK PERMISSION FROM YOUR INSTRUCTOR before removing or altering the position of a machine guard.
4. BEFORE OPERATING ANY EQUIPMENT OR MACHINE make sure the guard is in position, that it is in good condition and adequately guards the machine.
5. WHEN PUSHING MATERIAL INTO A POWER SAW use a push stick to avoid getting your hands close to the saw. DO NOT STAND DIRECTLY IN LINE with the saw. If the saw kicks the material back, it could injure you.
6. ALWAYS SWITCH OFF ELECTRICAL POWER before changing, cleaning, adjusting and repairing blade or machine.
7. Use \_\_\_\_\_ air only with teacher supervision.
8. Always turn off the machine and wait until all moving parts have come to a complete stop before making any adjustments or walking away from the machine. Never stop any moving parts with your hands or material.
9. Only one person operates a machine at one time; everyone else is to remain outside one \_\_\_\_\_ perimeter.
10. When using a utility knife, always \_\_\_\_\_ away from hands and body parts.
11. Do not be crowded when using a hot glue gun or knife.
12. Use hot glue \_\_\_\_\_ and with respect.

### Word Bank

Compressed quick hot sharp Meter address porcelain tripping Location  
 eyelashes ten feet stomach aches Hair eye injuries cautiously  
 Unsafe skipping nose humorous

# GENERAL SHOP SAFETY QUIZ (Sample 1)

NAME: \_\_\_\_\_

TRUE OR FALSE:

1. Emergency fire exits in public buildings have lighted signs indicating the exit. (T/F)
2. Regular eye glasses fall into the category of Personal Protective Equipment or PPE. (T/F)
3. I can bring my knapsack or coat to class as long as it remains away from my computer.  
(T/F)
4. I should first switch computers if the computer I normally sit at is not working. (T/F)
5. A good general practice for controlling germs is to wash your hands and use hand sanitizer often. (T/F)
6. WHMIS2015 is the short form of Workplace Hazardous Materials Information System. (T/F)
7. It is okay to use hand lotion in class but do not bring in food or drinks. (T/F)
8. Running cables on the floor is okay provided they are lying flat. (T/F)
9. If the alarm sounds, I need to find the closest exit as quickly as possible. (T/F)
10. The WHMIS2015 program provides information about cautionary labeling of containers.  
(T/F)



# GENERAL SHOP SAFETY QUIZ (Sample 2)

## True or False Questions

1. If you are uncertain about something in the shop, it is okay to ask a peer.
2. All injuries must be reported to the teacher immediately.
3. Shop equipment needs to be cleaned only at the end of the period each day.
4. It is okay to bring a drink into the shop as long as none of the equipment is running
5. Carrying a tool in your pocket is okay as long as you don't remove it from the class.
6. It is okay to talk to a person while they are using a piece of equipment, as long as you do not distract them.
7. It is okay to use a flat screwdriver to scrape some old paint off of a piece of wood.
8. The first aid kit can be stored in the school main office so no one steals the contents.
9. A class "D" fire extinguisher is a must in a shop.
10. Once you've received your equipment certification you may use the equipment any time without permission
11. Minor injuries need not be reported.
12. If a machine does not work, report it to the instructor.
13. At all times, if you are in doubt of how to use equipment, ask someone who is licensed.
14. All guards must be in place and properly working before using the equipment.
15. As long as no one is using the equipment after you, leave it running until you need it again.
16. Safety equipment is necessary only when power is on.
17. A safety zone is an area where shop rules do not apply.
18. Long hair must be tied back before using any power tool.
19. Before working in a shop you should know where the emergency exits are.
20. Any adjustments to a machine must be made with the power off.

## Answer Key

- |       |       |       |       |       |
|-------|-------|-------|-------|-------|
| 1. F  | 2. T  | 3. F  | 4. F  | 5. F  |
| 6. F  | 7. F  | 8. F  | 9. F  | 10. F |
| 11. T | 12. T | 13. F | 14. T | 15. F |
| 16. F | 17. F | 18. T | 19. T | 20. T |

# GENERAL SHOP SAFETY TEST

## True/False Questions

1. If you are uncertain about something in the shop, it is okay to ask someone in the other class for help. (T/F)
2. All injuries must be reported to the teacher immediately. (T/F)
3. Safety glasses are only required while working inside the shop. (T/F)
4. Shop equipment needs to be cleaned only at the end of the period each day. (T/F)
5. It is okay to bring a drink into the mini-shop, as long as none of the equipment is running. (T/F)
6. Carrying a tool in your pocket is okay, as long as you don't remove it from the class. (T/F)
7. It is okay to talk to a person while they are using a piece of equipment, as long as you don't distract them. (T/F)
8. It is okay to use a flat screwdriver to scrape some old paint off of a piece of wood. (T/F)
9. When making adjustments to the depth guide on the drill press, you need to make sure that it is running at the proper speed before making the adjustment. (T/F)
10. The blade guide on the band saw should be kept at least 1" from the material being cut. (T/F)
11. When making an intersecting cut on the bandsaw, you should always make the long cut first, and the short cut second. This will ensure that the material does not get in your way. (T/F)
12. It is okay to remove scrap pieces from the band saw or scroll saw table, while the saw is running, as long as you keep your hands well away from the blade. (T/F)
13. The best way to operate the band saw or the scroll saw is from the right side, this will allow you a better angle to observe your cuts. (T/F)
14. When using the band saw or the scroll saw, never place your hand in front of the blade. (T/F)
15. When cutting a piece of wood on the scroll saw or the band saw, you should always try to cut right on the line. That way you will have a minimal amount of sanding to do. (T/F)
16. When using the drill press, try to use the highest speed that the drill press will run at to drill a hole. This will ensure that the hole is as smooth as possible. (T/F)
17. Leaving the chuck key in the drill chuck can be very dangerous. (T/F)
18. Always try to clamp your work piece to the drill press table. (T/F)
19. Do not leave a machine running unless another student is waiting to use it. (T/F)
20. Guards should only be removed when it interferes with cutting the workpiece. (T/F)

# GENERAL SHOP SAFETY TEST (cont'd)

## Multiple Choice Questions

1. If an accident occurs in the shop, the first thing you do is:
  - a. Turn off your machine and get yourself to a safe position.
  - b. Go to the office and tell the secretary that someone has been hurt.
  - c. Run around screaming that you can't stand the site of blood.
  - d. Give immediate first aid, whether you are qualified or not.
  
2. Which of the following pieces of equipment would not be deemed to be personal safety equipment
  - a. safety glasses.
  - b. face shield
  - c. ear plugs
  - d. loose clothing
  
3. Which of the following pieces of equipment can you leave running while talking to your classmates?
  - a. band saw
  - b. drill press
  - c. scroll saw
  - d. none of the above
  
4. Which of the following is not acceptable in the shop?
  - a. loose clothing
  - b. jewelry
  - c. long hair
  - d. all of the above
  
5. Which of the following is not a part of the drill press?
  - a. upper blade guard
  - b. chuck key
  - c. depth stop
  - d. three jaw chuck

## GENERAL SHOP SAFETY TEST (cont'd)

### Multiple Choice Questions

6. When using the drill press, high feed rates and high-speed rates will
  - a. ensure that you have a round hole
  - b. dull the drill bit
  - c. give you a highly polished hole that will not require any further sanding
  - d. burn out the motor on the drill press
  
7. Which of the following is not a part of the band saw?
  - a. blade guard
  - b. chuck key
  - c. rip fence
  - d. upper wheel guard
  
8. Which of the following must be completed before being granted permission to use a machine?
  - a. participate in safety lesson and demonstration
  - b. completion of written or oral safety test
  - c. demonstrate safe operation of the machine
  - d. all of the above
  
9. Which of the following PPE items are necessary when operating any machine in the shop?
  - a. safety glasses or face shields
  - b. safety footwear
  - c. coveralls
  - d. work gloves
  
10. Operate equipment only when
  - a. permission is granted
  - b. wearing PPE
  - c. guards are in place
  - d. all of the above

# GENERAL SHOP SAFETY TEST (cont'd)

## Fill in the Blank Questions

1. Always get \_\_\_\_\_ from the instructor before using the drill press.
2. A safety data sheet provides information on equipment \_\_\_\_\_.
3. Always wear \_\_\_\_\_ when using any shop equipment
4. At all times, \_\_\_\_\_ see your instructor.
5. Maintain good \_\_\_\_\_ practices when dealing with chemical substances.
6. Students are not allowed to use equipment without having a safety \_\_\_\_\_ for that equipment.
7. A safety \_\_\_\_\_ lists a student's level of certification for each piece of equipment in the shop.
8. When using the drill press, a \_\_\_\_\_ is required when cutting cylindrical stock.
9. Before using equipment, be sure that all \_\_\_\_\_ are in place and properly adjusted.
10. Use a \_\_\_\_\_ when cutting small pieces on a band saw.
11. When using any cutting equipment, make sure the blades are running at \_\_\_\_\_.
12. Always be aware of \_\_\_\_\_.
13. \_\_\_\_\_ before replacing any broken, dull or damaged bits or blades.
14. After use, \_\_\_\_\_ and return the tool to its proper place.
15. Understand and follow \_\_\_\_\_ instruction before handling chemical substances.

## Word Bank

if in doubt, unplug, guards, full speed, housekeeping, record card, certificate, WHMIS2015, v-block, clamp, clean, permission, PPE, push stick, risk factors, emergency stop button

# ADHESIVES, PAINTS, FINISHES AND SEALANTS SAFETY ASSIGNMENT

Before using any adhesive, paint, finish or sealant it is essential that you understand how to properly use the product, what personal protective equipment (PPE) is required, hazard identification, emergency first aid measures, clean up procedures and proper storage and handling.

Complete the following chart for each and every adhesive, paint, finish or sealant that you will be using in class. You can find the information to complete this chart on both the label of the product and on the SDS sheet (which can be found in the SDS binder in the classroom or also can be accessed via the internet)

Product Name:

Steps required to properly use the product:

Personal protective equipment (PPE) required

Hazard identification

Emergency first aid measures

Clean up procedures

Proper storage and handling

# BAND SAW SAFETY QUIZ

NAME: \_\_\_\_\_

FILL IN THE BLANKS:

1. When using the band saw, \_\_\_\_\_ are required when cutting tight curves.
2. You should adjust the \_\_\_\_\_ above the work before beginning to cut.
3. Narrow blades are best suited for cutting \_\_\_\_\_ curves, \_\_\_\_\_ ones are best for straight cuts.
4. When cutting with the band saw, the blade should cut on the \_\_\_\_\_ side of the pencil line.
5. When using the band saw, plan your cuts carefully. Saw curves gradually. Sudden twists will cause the blade to \_\_\_\_\_ or \_\_\_\_\_.
6. When using the band saw, keep your hands \_\_\_\_\_ or \_\_\_\_\_ the blade.  
Never in front.
7. Always support \_\_\_\_\_ pieces.
8. Use \_\_\_\_\_ sticks on small pieces.
9. Use a piece of wood to help \_\_\_\_\_ pieces of scrap from around the blade.

WORD BANK:

relief cuts, waste, behind, push, upper guide, break, sharp, wide, bind, beside, long, remove



# BELT and DISK SANDER SAFETY QUIZ

NAME: \_\_\_\_\_

1. Wear \_\_\_\_\_ goggles or glasses.
2. Only sand \_\_\_\_\_ curves.
3. Check the \_\_\_\_\_ of the disk. Work on the downward side of the motion.
4. Use a crepe block on the disk to \_\_\_\_\_ and \_\_\_\_\_ the disk from rotating.
5. Only one person \_\_\_\_\_ the machine at a time.
6. Remove \_\_\_\_\_ and tie back \_\_\_\_\_ hair.
7. Let the work \_\_\_\_\_ on the table and do not force it into the disk or the belt.
8. Keep your \_\_\_\_\_ away from the edge that contacts the sandpaper.

WORD BANK:

Safety, clean, jewellery, long, rest, fingers, rotation, operates, outside, stop

# CHEMICAL HANDLING SAFETY QUIZ

NAME: \_\_\_\_\_

Fill in the Blanks:

1. Place chemicals are approved, \_\_\_\_\_ containers ONLY.
2. Do not use chemicals beyond their \_\_\_\_\_ date.
3. Ensure that there is adequate \_\_\_\_\_ when using chemical substances.
4. DO NOT dispose of chemicals down \_\_\_\_\_. Ask your instructor for proper disposal methods and procedures.

Short Answer:

1. Use appropriate PPE (personal protection equipment at all times when handling chemicals.  
PPE includes:
  - a)
  - b)
  - c)
  - d)
  - e)

WORD BANK:

drains

ventilation

labelled

expiration

# DREMEL TOOL SAFETY QUIZ

NAME: \_\_\_\_\_

Fill in the Blanks:

1. Keep your hand away from any \_\_\_\_\_; because of the high speeds, the location of the spinning bit may not always be obvious.
2. A \_\_\_\_\_ should never be placed into a Dremel tool with the switch in the on position
3. Always grasp the shaft \_\_\_\_\_ when operating the tool.
4. Do not \_\_\_\_\_ the bit or collet immediately after use, because they will be hot.
5. Always tie back long hair and keep your head and clothes well away from all \_\_\_\_\_ of the dremel tool.

WORD BANK:

Firmly      moving parts      battery pack      touch      spinning bit

# DRILL PRESS SAFETY QUIZ

NAME: \_\_\_\_\_

Fill in the Blanks:

1. Always operate the drill press from the \_\_\_\_\_, never from the \_\_\_\_\_.
2. Make sure your \_\_\_\_\_ are on before you start the machine.
3. Make sure all \_\_\_\_\_ clothes and long \_\_\_\_\_ are restrained.
4. Choose a drill bit that is \_\_\_\_\_ and in good condition.
5. Remove the \_\_\_\_\_ from the chuck before starting the machine.
6. Check for the proper \_\_\_\_\_ for the drill size and material you are working on.
7. \_\_\_\_\_ the work securely before drilling when using a large diameter drill bit.
8. Never attempt to \_\_\_\_\_ a piece of work if it slips from the clamp.
9. Always make sure the drill press has \_\_\_\_\_ before attempting to change speeds.
10. If the drill sticks in the workpiece, \_\_\_\_\_ the motor and rotate the chuck by \_\_\_\_\_ to free it up.
11. Always clear away \_\_\_\_\_ and curls with a \_\_\_\_\_ not with your hands.

WORD BANK:

sharp hair chips brush stopped turn off hand loose chuck key speed  
clamp grab front side safety glasses

# HAND SAW SAFETY QUIZ

NAME: \_\_\_\_\_

Fill in the Blanks:

1. Before beginning any work with a hand saw, ensure the work area is clear of \_\_\_\_\_.
2. Select an appropriate \_\_\_\_\_ for the material being cut (e.g. wood, plastic, metal, etc).
3. When using a hacksaw ensure the teeth are pointing \_\_\_\_\_.
4. Check the material for any defects such as knots and foreign objects such as nails, staples or screws; remove \_\_\_\_\_ objects.
5. Ensure that the stock being cut is \_\_\_\_\_.
6. Do not apply too much pressure on the blade as the blade may break. Do not \_\_\_\_\_ when applying pressure.
7. Never leave saws on the floor, \_\_\_\_\_, on ramps or hoists where they could be forgotten or create a tripping hazard.

WORD BANK:

hanging over edges	twist	metal	firmly secure
debris	forward	blade	

# HOT WIRE FOAM CUTTER SAFETY QUIZ

NAME: \_\_\_\_\_

Fill in the Blanks:

1. Always wear leather or \_\_\_\_\_ gloves and safety glasses or goggles when using a foam cutter.
2. Keep the foam cutter away from \_\_\_\_\_ and use it in work areas that are clean and dry.
3. Use the foam cutter glue gun in well \_\_\_\_\_ areas.
4. It is important to ensure that the equipment operates at the lowest temperature that allows \_\_\_\_\_.
5. Controlled electrical heating is desirable to obtain an even wire temperature. If smoke is given off, the wire is too \_\_\_\_\_.

WORD BANK:

flammable materials      hot      ventilated      heat resistant      free cutting

# LASER CUTTING SAFETY QUIZ

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. NEVER LEAVE THE LASER CUTTER when it is \_\_\_\_\_

- A. in operation
- B. on
- C. in the middle of a job
- D. being maintained

2. Do not use this machine unless \_\_\_\_\_

- A. it is cutter clean and free of debris
- B. the fume extraction system is on
- C. 200
- D. 400

3. This type of plastic releases toxic gasses when melted. Use proper ventilation when operating the printer.

- A. PLA
- B. ABC
- C. ABS
- D. PVC

4 When setting up a file to be cut. The laser cutter should be set to \_\_\_\_\_

- A. Full power
- B. The lightest power available
- C. The appropriate power and speed based on the material being cut
- D. All of the above

5. Why is ventilation/extraction required?

- A. Reduction of fire hazard
- B. To reduce smoke and smell
- C. To keep the machine clean
- D. All of the above

# MITRE SAW SAFETY QUIZ (Sample 1)

NAME: \_\_\_\_\_

## TRUE/FALSE

1. Never stand directly in the path of the blade when cutting. (T/F)
2. Crossing your arms is permitted during the operation of the saw. (T/F)
3. Safety glasses are not required when operating this machine. (T/F)
4. You do not need to clamp small pieces. (T/F)
5. You must ensure that the guard is functioning correctly before operating the saw. (T/F)
6. You must always keep your fingers away from the path of the cutting blade. (T/F)

## SHORT ANSWER QUESTIONS

1. What is the shortest piece of stock that can be cut using this saw? (1 mark)
2. What must you do before cutting any material on the mitre saw? (1 marks)
3. If your stock should jam while using this saw, what should you do? (4 marks)
4. Name two cutting operations that can be performed on this saw? (2 marks)

## IDENTIFY THE PARTS OF THE MITRE SAW

(insert picture of your shop's mitre saw here)



# MITRE SAW SAFETY QUIZ (Sample 2)

NAME: \_\_\_\_\_

Fill in the Blanks:

1. Secure the mitre saw to the work surface with \_\_\_\_\_ or bolts.
2. Remove all \_\_\_\_\_ and tie back \_\_\_\_\_ hair.
3. Your body should be \_\_\_\_\_ of blade assembly.
4. Ensure the blade clears the \_\_\_\_\_ before cutting.
5. Always use your \_\_\_\_\_ hand to operate the trigger.
6. Ensure the \_\_\_\_\_ is functioning correctly before operating the saw.
7. When making \_\_\_\_\_ cuts ensure the blade has adequate clearances.
8. \_\_\_\_\_ pieces should be supported.
9. Watch for \_\_\_\_\_ when cutting small pieces.
10. Keep your \_\_\_\_\_ clear of the blade path when cutting short pieces that cannot be clamped down.

WORD BANK:

kickbacks	long	left hand	clamps	jewellery
left	right	guard	angular	stock

# MODELING KNIVES SAFETY QUIZ

NAME: \_\_\_\_\_

Fill in the Blanks:

1. Determine the \_\_\_\_\_ for the job - there are many different types of blades and utility knives for different purposes.
2. Always use a \_\_\_\_\_ and pick up knives by the handle only.
3. Do not \_\_\_\_\_ for a falling knife. When a knife falls jump back out of the way
4. Use a \_\_\_\_\_ at all times, never cut on a metal surface.
5. Keep your fingers as far away from the blade as possible, but be sure to maintain a \_\_\_\_\_ of the material being cut.
6. Avoid using \_\_\_\_\_ and trying to make deep cuts. Make several passes when cutting.
7. Use a \_\_\_\_\_ when cutting a straight line.
8. As you will need to pull the knife \_\_\_\_\_ for control and strength, pull in a direction that is to the side of your body.
9. When not in use, always \_\_\_\_\_ on retractable knives or fit the guard if supplied. A knife with no guard should be placed in a way that it cannot roll and that the blade is not \_\_\_\_\_ at any one.

WORD BANK:

correct tool   excessive force   retract the blade   cutting board/mat   straight edge  
towards you   safe grasp   pointing   grab sharp blade

# PAINTS, SEALANTS AND FINISHES QUIZ

NAME: \_\_\_\_\_

Fill in the Blanks:

1. \_\_\_\_\_ after using any finishing materials.
2. Do all finishing in a \_\_\_\_\_ area specifically designed for finishing.
3. Never leave opened finishing materials \_\_\_\_\_.
4. Never use tools or machines that can cause \_\_\_\_\_ or start a fire in the finishing area.
5. Many solvents are extremely \_\_\_\_\_. Keep all solvents away from sources of heat, sparks, and fires.
6. Store paint and solvents in their \_\_\_\_\_ containers. If, for some reason, this is not possible, be sure the new container's \_\_\_\_\_.
7. Spillages of any type should be attended to immediately. Water-based products can be washed away with \_\_\_\_\_ before they dry, provided it is permissible.
8. All adhesives and sealants should be stored in \_\_\_\_\_ and reasonable temperatures.

WORD BANK:

unattended	water	clearly labeled	wash your hands
well ventilated	dry conditions	original, flammable	sparks

# POWER TOOLS SAFETY QUIZ

NAME: \_\_\_\_\_

## FILL IN THE BLANKS:

1. Keep guards in place and follow \_\_\_\_\_ procedures.
2. Keep fingers, hands, clothing and hair, etc., well clear of any \_\_\_\_\_ bits, etc.
3. Know the \_\_\_\_\_ of each tool you use and use each for the specific task it was designed to do.
4. Always use \_\_\_\_\_ on the tool when operating. Clamp the workpiece to a solid surface; do not attempt to hold the workpiece with hand or foot.
5. Electrical cords must be in \_\_\_\_\_; report any broken, damaged or bare cords. Keep cords away from heat, oil, and sharp edges
6. Never use power tools in \_\_\_\_\_ or if the worker is perspiring. Moisture helps electricity flow more easily through the body.
7. Never carry a tool by its \_\_\_\_\_ or pull the cord to disconnect it from a receptacle. Never carry a plug-in tool with your finger on the switch.
8. \_\_\_\_\_ tools before replacing any broken, dull or damaged bits or blades.
9. Be careful not to \_\_\_\_\_. Keep your balance and proper footing when working with power tools.
10. When you have completed an operation with a power tool, switch it off and \_\_\_\_\_ after it stops. Keep the rotating blade or bit away from your legs and body.
11. Keep the floor around the work area \_\_\_\_\_.
12. Be sure the power switch for a portable tool is \_\_\_\_\_ before plugging it in.

## WORD BANK:

unplug      clean      cord      overreach "off" purpose damp or wet locations good condition  
two hands rotating tools lay the tool down in a safe manner lockout/tag-out

# SCROLL SAW SAFETY QUIZ

NAME: \_\_\_\_\_

FILL IN THE BLANKS:

1. Follow the manufacturer's instructions for \_\_\_\_\_.
2. Ensure that the \_\_\_\_\_ is being used for the type and size of material. Use the correct speeds for the material being cut (variable speed machines).
3. When pushing the work through, do not force the piece. Keep fingers \_\_\_\_\_ of the blade path. Use both hands and keep fingers at least 10 cm. (4 in.) from the blade at all times.
4. Never \_\_\_\_\_ a jammed piece through the equipment. Shut the power off and then carefully dislodge the piece.
5. Plan your cuts carefully. Saw \_\_\_\_\_ gradually. Sudden twists will cause the blade to bind or break. Use relief cuts if necessary. Always make a short cut first.
6. Avoid \_\_\_\_\_ of cuts with the power on. Backing out of a cut may cause the blade to bind
7. If the blade breaks, turn the power off \_\_\_\_\_ and step back. Inform the instructor immediately.
8. Always operate the saw from the \_\_\_\_\_ never from the side.
9. Do not leave the scroll saw until the blade has \_\_\_\_\_.

WORD BANK:

backing out	stopped	clear	curves	changing tool
accessories	immediately	correct blade	pull or force	front

## 3D Printer Quiz

1. Always wear proper \_\_\_\_\_ when operating the 3D Printer. I.e. safety glasses, goggles, gloves, or lab coats.
2. Be sure to read and understand the \_\_\_\_\_ before operating.
3. Limit equipment access to trained or \_\_\_\_\_.
4. Before beginning a 3D print, make sure the \_\_\_\_\_ is clear of \_\_\_\_\_ material, debris, tools or other objects.
5. Use enclosures for 3D printers and proper \_\_\_\_\_ to capture chemical emissions.
6. There is a slight smell from ABS when it is being extruded. A well-ventilated room is recommended; however, when printing, keep the printer away from any \_\_\_\_\_ as this can affect the \_\_\_\_\_ of ABS prints.
7. Using printer \_\_\_\_\_ with lower emissions is recommended.
8. Never reach inside the 3D printer while it is in operation. In addition to the risk of \_\_\_\_\_, injury from moving mechanical parts or electric shock.
9. Never touch the extruder nozzles. They reach temperatures in excess of \_\_\_\_\_ Celsius and may be hot enough to cause a serious burn during operation, or when heating up and cooling down. Use needle nose pliers to remove bits of debris from the nozzles.
10. Always refer to the owner's manual for instructions on \_\_\_\_\_ filament.
11. Reduce time spent near the printer while it is running to limit \_\_\_\_\_ to fumes.
12. Use caution when removing parts from the \_\_\_\_\_ as the extruder and build platform may be hot.
13. Use only the \_\_\_\_\_ supplied with the printer, or the printer may be damaged, with a risk of fire.
14. Consult the Safety Data Sheets (SDSs) for safety information regarding the \_\_\_\_\_ you will be using.
15. Always reference the \_\_\_\_\_ before operating and servicing equipment.

Word Bank: PPE, owner's manual, authorized personnel, bed, build, ventilation, drafts, warping, filament, burn, 200 degrees, adding or removing, exposure, build platform, power adapter, filament, owner's manual

# STAPLE GUN SAFETY QUIZ

NAME: \_\_\_\_\_

## FILL IN THE BLANKS:

1. Examine the item you are about to staple and compare it to the \_\_\_\_\_ of the staples you plan to use.
2. Stapling will be more successful if you have a firm, stationary surface underneath the \_\_\_\_\_.
3. Keep your \_\_\_\_\_ off the trigger when not firing staples or when carrying around. The centre of gravity at the trigger makes it easy to accidentally fire the staple gun.
4. NEVER use a staple gun if the \_\_\_\_\_ does not operate properly. Report this to your teacher.
5. Be careful to always keep your \_\_\_\_\_ and feet away from the nose of the staple gun when firing staples.
6. Fire staples into appropriate surfaces ONLY. Do not fire staples \_\_\_\_\_ of another – they may ricochet.
7. Never rest the staple gun against \_\_\_\_\_, or try to climb a \_\_\_\_\_ with the staple gun cradled against your body.
8. Never point a staple gun at anyone.
9. \_\_\_\_\_ out unused staples before clearing a staple jam.

## WORD BANK:

Ladder, width and depth, work, piece, hands, empty, any body part, on top, trigger finger

# SOLDERING SAFETY QUIZ

NAME: \_\_\_\_\_ FILL

IN THE BLANKS:

1. Ensure adequate \_\_\_\_\_. Solder may contain lead. DO NOT breathe fumes from soldering or desoldering operations.
2. Clamp work securely while performing soldering or desoldering. Use a vice or other approved clamping systems to keep your hands \_\_\_\_\_.
3. Use heat sinks to protect circuit components. Do not apply excessive heat or apply heat for excessive \_\_\_\_\_.
4. Beware of hot soldering irons and components. Make sure others are aware of hot tools. Switch off and/or \_\_\_\_\_ soldering tools when not in use. Allow to cool before storing.
5. When working with used circuit boards, make sure desolder or solder area is clean and \_\_\_\_\_ or grease before applying heat.
6. Be aware of the \_\_\_\_\_ of your soldering iron or pencil while it is hot, or cooling. Make sure you place the hot iron in an appropriate holder to prevent heat or fire damage.
7. When soldering wire connections, make sure the wires are tightly \_\_\_\_\_. Use appropriate covering like heat shrink tubing or twist-on connectors to protect the splice. Do not use wires with melted insulation or exposed conductors.

WORD BANK:

free of dust	location	connected	ventilation	unplug
lengths of time	free to work			



# UNDERSTANDING WHMIS 2015

What do the letters in WHMIS2015 represent>

W-

H -

M -

I -

S -





WHAT IS WHMIS2015?

WHAT IS A SAFETY DATA SHEET (SDS)?

WHERE WOULD A SDS BE FOUND?




WHAT TYPE OF INFORMATION WOULD YOU FIND ON AN SDS?



## UNDERSTANDING WHMIS2015 (cont'd)

SYMBOL	RISKS	PRECAUTIONS	EXAMPLE
			
			
			
			

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## UNDERSTANDING WHMIS2015 (cont'd)

SYMBOL	RISKS	PRECAUTIONS	EXAMPLE
			
			
			

# SUPPLIER LABEL STUDENT HANDOUT

Identify the required information on this sample WHMIS2015 label:  
(Note border may be hatched, but is not required)

## Product K1 / Produit K1



### Danger

Fatal if swallowed.  
Causes skin irritation.

#### Precautions:

Wear protective gloves.  
Wash hands thoroughly after handling.  
Do not eat, drink or smoke when using  
this product.

Store locked up.  
Dispose of contents/containers in  
accordance with local regulations.

IF ON SKIN: Wash with plenty of water.  
If skin irritation occurs: Get medical  
advice or attention.  
Take off contaminated clothing and  
wash it before reuse.  
IF SWALLOWED: Immediately call  
a POISON CENTRE or doctor.  
Rinse mouth.

### Danger

Mortel en cas d'ingestion.  
Provoque une irritation cutanée.

#### Conseils :

Porter des gants de protection.  
Se laver les mains soigneusement après manipulation.  
Ne pas manger, boire ou fumer en manipulant  
ce produit.

Garder sous clef.  
Éliminer le contenu/récipient conformément aux  
règlements locaux en vigueur.

EN CAS DE CONTACT AVEC LA PEAU : Laver  
abondamment à l'eau.  
En cas d'irritation cutanée : Demander un avis  
médical/consulter un médecin.  
Enlever les vêtements contaminés et les laver  
avant réutilisation.  
EN CAS D'INGESTION : Appeler immédiatement un  
CENTRE ANTIPOLSON ou un médecin.  
Rincer la bouche.

Compagnie XYZ, 123 rue Machin St, Mytown, ON, N0N 0N0 (123) 456-7890

## SECTION 4: SAFETY PASSPORTS

### SECTION OVERVIEW

This section contains Safety Passports, which provide a means to track individual student safety knowledge and skills. These Safety Passports ensure that students have passed the required safety tests and understand the safety procedures and rules specific to the tools and equipment. It is recommended that all teachers keep records of signed passports at all times.

Safety Passports may be signed by teachers, parents and students before working on any workshop machine or tool. Signing signifies completion of safety training and testing. There are three variations; teachers may select the most appropriate method to suit their needs. Ensure that the selected safety passport addresses board and school safety policies.

Safety Record Card: for individual student, records their proficiency rating for each machine on one sheet.

Safety Passport: Form 1: single sheet for individual student and machine, has signature area and note area to be used in student notebook

Safety Passport Form 2: sheets for individual students listing machines, for teacher record book

Safety Passport Form 3: individual machine for each individual student, has line for parent signature to be used as a safety reinforcement or authorization, (see principal for permissions)

### NOTE:

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Please see specific equipment manuals for further safety information, as well as local, Board and school policies and regulations.

## SAMPLE STUDENT SAFETY RECORD CARD

STUDENT INFORMATION	LEVELS CHART			
Name:  Student #:  Grade:  Course/Section:	Rating 1: May set-up equipment only, Instructor must do the work.  Rating 2: Use only with an instructor's assistance.  Rating 3: Full use with an instructor standing by to supervise.  Rating 4: Full use of machine with an instructor's permission.  (Note: Lower levels can be upgraded to higher levels with further instruction, practice and proof of competence. All students must have Instructor's permission before using any equipment.)			
<b>Technological Design Equipment</b>				
Equipment	Rate	Sign	Date	Notes/Remarks
Band saw				
Belt and Disc sander				
Dremel Tools				
Drill Press				
Exacto Knife				
Foam Cutter				
Hand Drill				
Hand sanders				
Hot Glue Gun				

Mitre Saw				
Plastic Forming Equipment				
Scroll saw				
Shop Hand & Power Tools				
Soldering Iron				
Staple/Staple Gun				



## TECHNOLOGY LAB SAFETY PASSPORT

The purpose of the safety passport is to ensure that students are fully aware of all safety features on each piece of equipment in the technical facility prior to using them independently.

The general process is as follows:

1. Lesson: When the teacher introduces a new piece of equipment (e.g., lathe), the student records the date of the safety demonstration on their safety passport. This is to be initiated by the teacher (see sample below). The teacher demonstrates techniques for the safe operation of the machine and personal protective equipment (e.g., eye protection, secure loose hair, removing jewelry, protective clothing, etc.). After the demonstration, students write a note in their notebooks. This safety note is carefully recorded in each student's notebook along with the signed passport. The teacher also carefully notes attendance for that day in their daybook if any students are absent for the safety lesson; makeup opportunities must be provided.
2. Test: Each student should complete a written or oral test on the safe operation of the machine tool, outlining all safety features that must be observed. The individual machine tests are designed to complement any general facility safety rules. Upon satisfactory completion of the test the student dates the "tested" column and teacher initials this as complete. IMPORTANT NOTE: A copy of the test should be kept by the teacher.
3. Student Demonstration: Students must demonstrate to the teacher that they have a thorough knowledge of the safety rules for the equipment and are able to demonstrate their competency on the equipment. Once the teacher has observed the required safe setup and operation of the equipment by a student the teacher signs off that portion of their passport.
4. Once the student has completed #1, 2 and 3, the teacher signs the final column of student's safety passport indicating that they have permission to use that equipment. Students must be able to provide the teacher with their signed passport for that equipment each time they wish to use that equipment.

Note: Three forms are provided, Form 1 can be used as a student notebook form for each machine; Form 2 can be used for signing several machines per student. With the 2nd form, students keep safety notes on separate paper. The third form requires one sheet per tool per student, and may be used in the student notebook or kept on file by the teacher (or both).

# SAFETY PASSPORT FORM 1

Student Name: \_\_\_\_\_ Course/class: \_\_\_\_\_

Equipment: _____							
Attended Teacher Safety Instruction and Demonstration (notes recorded)		Passed Written or Oral Testing		Demonstrated Safe Setup and Operation of Equipment to Teacher		Granted Permission to use Equipment by Teacher	
Date of Lesson	Teacher Initial	Date Tested	Teacher Initial	Date of Demo.	Teacher Initial	Date	Teacher Initial

NOTES:

## SAFETY PASSPORT FORM 2

Student Name: \_\_\_\_\_ Course/class: \_\_\_\_\_

Equipment: _____							
Attended Teacher Safety Instruction and Demonstration (Notes recorded)		Passed Written or Oral Testing		Demonstrated Safe Set-up and Operation of Equipment		Granted Permission to use Equipment by Teacher	
Date of Lesson	Teacher Initial	Date Tested	Teacher Initial	Date of Demo.	Teacher Initial	Date	Teacher Initial
Equipment: _____							
Attended Teacher Safety Instruction and Demonstration (Notes recorded)		Passed Written or Oral Testing		Demonstrated Safe Set-up and Operation of Equipment		Granted Permission to use Equipment by Teacher	
Date of Lesson	Teacher Initial	Date Tested	Teacher Initial	Date of Demo.	Teacher Initial	Date	Teacher Initial

## SAFETY PASSPORT FORM 3: Equipment Passport

<h3>[EQUIPMENT TYPE]</h3>
General Conditions
Personal Protective Equipment
Possible Risk Factor
<div><input type="checkbox"/> The student has been trained on this equipment.</div> <div><input type="checkbox"/> The student understands the required personal protective equipment to operate this equipment.</div> <div><input type="checkbox"/> The student is aware of the possible risk factors</div> <div>Student signature _____</div> <div>Teachers signature _____</div> <div>Date of training _____</div>

# BAND SAW PASSPORT

## General Conditions

Students must be trained on the safe and proper use of the Band Saw before they may begin using it. The student must demonstrate safe and proficient procedures.

## Personal Protective Equipment

- ☐ Safety Glasses
- ☐ Safety footwear
- ☐ Gloves [material handling]

## Possible Risk Factor

- ☐ Entanglement [hands and hair]
- ☐ Small projectiles [chips]
- ☐ Hand injuries
- ☐ Cuts and Abrasions
- ☐ Eye injuries

- ☐ The student has been trained on this equipment.
- ☐ The student understands the required personal protective equipment to operate this equipment.
- ☐ The student is aware of the possible risk factors

Student signature \_\_\_\_\_

Teachers signature \_\_\_\_\_

Date of training \_\_\_\_\_

# BELT/ DISC SANDER PASSPORT

## General Conditions

Students must be trained on the safe and proper use of a Belt/ Disc Sander before they may begin using it. The student must demonstrate the ability to use the equipment safely and proficiently.

## Personal Protective Equipment

- ☐ Safety Glasses
- ☐ Safety footwear
- ☐ Dust mask [breathing protection]

## Possible Risk Factor

- ☐ Small projectiles [wood pieces]
- ☐ Slips and falls [wood dust]
- ☐ Fine dust Hazard
- ☐ Entanglement of hair, clothing and jewelry
- ☐ Burns and abrasions to hands and fingers
- ☐ Crushing of fingers

- ☐ The student has been trained on this equipment.
- ☐ The student understands the required personal protective equipment to operate this equipment.
- ☐ The student is aware of the possible risk factors

Student signature \_\_\_\_\_

Teachers signature \_\_\_\_\_

Date of training \_\_\_\_\_

# DREMEL TOOLS PASSPORT

## General Conditions

Students must be trained on the safe use of Dremel Tools before they may begin using them. The student must demonstrate to the teacher proficiency and the safe work procedures that must be followed before usage.

## Personal Protective Equipment

- ☐ Safety glasses

## Possible Risk Factor

- ☐ Eye injuries
- ☐ Hand Injuries, cuts and abrasions
- ☐ Impalement
- ☐ Electric shock or electrocution
- ☐ Entanglement

- ☐ The student has been trained on this equipment.
- ☐ The student understands the required personal protective equipment to operate this equipment.
- ☐ The student is aware of the possible risk factors

Student signature \_\_\_\_\_

Teachers signature \_\_\_\_\_

Date of training \_\_\_\_\_

# DRILL PRESS PASSPORT

## General Conditions

Students must be trained on the safe and proper use of the Drill Press before they may begin using it. The student must demonstrate the ability to use the equipment safely and proficiently.

## Personal Protective Equipment

- ☐ Safety Glasses
- ☐ Appropriate Footwear [work boots]
- ☐ Work Gloves

## Possible Risk Factor

- ☐ Eye injuries
- ☐ Hand Injuries
- ☐ Entanglement of clothing and hair
- ☐ Slipping

- ☐ The student has been trained on this equipment.
- ☐ The student understands the required personal protective equipment to operate this equipment.
- ☐ The student is aware of the possible risk factors

Student signature \_\_\_\_\_

Teachers signature \_\_\_\_\_

Date of training \_\_\_\_\_



# DRILL (portable air or electric) PASSPORT

## General Conditions

Students must be trained on the safe use of Hand Drills (air or electric) before they may begin using them. The student must demonstrate to the teacher proficiency and the safe work procedures that must be followed before usage.

## Personal Protective Equipment

- ☐ Safety glasses
- ☐ Coveralls
- ☐ Safety footwear
- ☐ Dry clothing

## Possible Risk Factor

- ☐ Eye injuries
- ☐ Hand Injuries, cuts and abrasions
- ☐ Impalement
- ☐ Electric shock or electrocution
- ☐ Entanglement
- ☐ Projectile (Chuck key)
- ☐ Compressed air

- ☐ The student has been trained on this equipment.
- ☐ The student understands the required personal protective equipment to operate this equipment.
- ☐ The student is aware of the possible risk factors

Student signature \_\_\_\_\_

Teachers signature \_\_\_\_\_

Date of training \_\_\_\_\_

# HAND and POWER TOOLS PASSPORT

## General Conditions

Students must be trained on the safe use with Shop Hand and Power Tools before they may begin working with them. The student must demonstrate to the teacher proficiency and the safe work procedures that must be followed before usage.

## Personal Protective Equipment

- ☐ Safety glasses
- ☐ Coveralls
- ☐ Safety footwear

## Possible Risk Factors

- ☐ Eye injury
- ☐ Projectiles
- ☐ Hand injuries
- ☐ Cuts and abrasions
- ☐ Entanglement
- ☐ Electrocutation

- ☐ The student has been trained on this equipment.
- ☐ The student understands the required personal protective equipment to operate this equipment.
- ☐ The student is aware of the possible risk factors

Student signature \_\_\_\_\_

Teachers signature \_\_\_\_\_

Date of training \_\_\_\_\_

# HAND SANDER PASSPORT

## General Conditions

Students must be trained on the safe and proper use of a Hand Sander before they may begin using it. The student must demonstrate the ability to use the equipment safely and proficiently.

## Personal Protective Equipment

- ☐ Safety Glasses
- ☐ Dust mask [breathing protection]

## Possible Risk Factor

- ☐ Slips and falls [wood dust]
- ☐ Fine dust Hazard
- ☐ Burns and abrasions to hands and fingers

- ☐ The student has been trained on this equipment.
- ☐ The student understands the required personal protective equipment to operate this equipment.
- ☐ The student is aware of the possible risk factors

Student signature \_\_\_\_\_

Teachers signature \_\_\_\_\_

Date of training \_\_\_\_\_

# HOT GLUE GUN PASSPORT

## General Conditions

Students must be trained on the safe use of Hot Glue Guns before they may begin working with them. The student must demonstrate to the teacher proficiency and the safe work procedures that must be followed before usage.

## Personal Protective Equipment

- ☐ Safety glasses

## Possible Risk Factors

- ☐ Hand Injuries: burns
- ☐ Electrocution

- ☐ The student has been trained on this equipment.
- ☐ The student understands the required personal protective equipment to operate this equipment.
- ☐ The student is aware of the possible risk factors

Student signature \_\_\_\_\_

Teachers signature \_\_\_\_\_

Date of training \_\_\_\_\_

# HOT WIRE FOAM CUTTER PASSPORT

## General Conditions

Students must be trained on the safe and proper use of Foam Cutting Apparatus before they may begin using it. The student must demonstrate to the teacher, proficiency and the safe work procedures that must be followed before usage. All electrical and fume protection safety must be enforced. All guards and safety devices must be in place and the ventilation system must be free and clear.

## Personal Protective Equipment

- ☐ Safety Glasses
- ☐ Heat Resistant Gloves
- ☐ Dust/Fume Mask – fume protection
- ☐ Fume Hood – Ventilated Area

## Possible Risk Factor

- ☐ Eye injuries
- ☐ Hand Injuries : cuts & burns
- ☐ Electrical shock
- ☐ Toxic Fumes

- ☐ The student has been trained on this equipment.
- ☐ The student understands the required personal protective equipment to operate this equipment.
- ☐ The student is aware of the possible risk factors

Student signature \_\_\_\_\_

Teachers signature \_\_\_\_\_

Date of training \_\_\_\_\_

# Laser Cutting

Many operations in manufacturing involve different types of Computer Aided Machinery. Laser Cutting is one of these. Make sure you know how to handle the machine and conduct regular cleaning maintenance.

1. WEAR PERSONAL PROTECTIVE EQUIPMENT (PPE) INCLUDING SAFETY GLASSES, sturdy footwear, gloves, and respiratory and hearing protection as required. Always wear proper, close fitting clothing to cover arms and legs. Long hair must be tied back.
2. LASER cutters pose a fire hazard. To further increase risk, some of the materials engaged by the laser cutter can leave flammable debris and can ignite inside the cutter.
3. Do not use this machine unless a teacher has instructed you in its safe use and a safety passport has been issued.
4. Before beginning a cut, make sure the bed is clear of build material, debris, tools or other objects. Keep the interior of the LASER cutter clean and free of debris.
5. NEVER LEAVE THE LASER CUTTER when it is in operation.
6. Ensure the fume extraction system is on before beginning cutting operation.
7. Ensure material to be cut is on the approved list and poses no hazard. Where possible consult the manufacturer's Safety Data Sheets (SDS) for specific technical data and precautionary measures concerning any materials cut with this equipment. If in doubt, ask your teacher.
8. Refer to the cutting manual for appropriate engraving and cutting Power and Speed settings for varied materials
9. Consult laser cutter Project Log Book prior to starting the project. Make sure you have documented your project and are compliant with the manufacturer's maintenance procedures. If in doubt, ask your teacher.
10. Ensure all safety devices are in place before operating.
  - The student has been trained on this equipment.
  - The student understands the required personal protective equipment to operate this equipment.
  - The student is aware of the possible risk factors.

Student signature \_\_\_\_\_

Teachers signature \_\_\_\_\_

Date of training \_\_\_\_\_

# MITRE SAW PASSPORT

## General Conditions

Students must be trained on the safe and proper use of a Mitre Saw before they may begin using it. The student must demonstrate safe and proficient procedures.

## Personal Protective Equipment

- ☐ Safety Glasses
- ☐ Breathing Protection [dust mask]
- ☐ Coveralls
- ☐ Hair net [long hair only]

## Possible Risk Factor

- ☐ Clothing or long hair [entanglement]
- ☐ High Speed Sharp blade [severe cuts]
- ☐ Fine dust
- ☐ Fire Hazard
- ☐ Small projectiles [wood splinters or debris]

- ☐ The student has been trained on this equipment.
- ☐ The student understands the required personal protective equipment to operate this equipment.
- ☐ The student is aware of the possible risk factors

Student signature \_\_\_\_\_

Teachers signature \_\_\_\_\_

Date of training \_\_\_\_\_

# MODELING KNIVES PASSPORT

## General Conditions

Students must be trained on the safe use of modeling knives before they may begin using them. The student must demonstrate to the teacher proficiency and the safe work procedures that must be followed before usage.

## Personal Protective Equipment

- ☐ Safety glasses
- ☐ Cutting Boards

## Possible Risk Factor

- ☐ Eye injuries – Blade Snapping
- ☐ Direction of Cuts
- ☐ Hand Injuries, cuts
- ☐ Impalement

- ☐ The student has been trained on this equipment.
- ☐ The student understands the required personal protective equipment to operate this equipment.
- ☐ The student is aware of the possible risk factors

Student signature \_\_\_\_\_

Teachers signature \_\_\_\_\_

Date of training \_\_\_\_\_



# SCROLL SAW PASSPORT

## General Conditions

Students must be trained on the safe and proper use of a Scroll Saw before they may begin using it. The student must demonstrate to the teacher, proficiency and the safe work procedures that must be followed before usage.

## Personal Protective Equipment

- ☐ Safety Glasses
- ☐ Dust Masks
- ☐ Coveralls
- ☐ Hair nets [long hair]

## Possible Risk Factor

- ☐ Small Projectiles
- ☐ Fine wood dust
- ☐ Minor cuts and abrasions
- ☐ Entanglement of Hair and clothing

- ☐ The student has been trained on this equipment.
- ☐ The student understands the required personal protective equipment to operate this equipment.
- ☐ The student is aware of the possible risk factors

Student signature \_\_\_\_\_

Teachers signature \_\_\_\_\_

Date of training \_\_\_\_\_

# SOLDERING PASSPORT

## General Conditions

Students must be trained on the safe use of soldering equipment before they may begin using them. The student must demonstrate to the teacher the safe work procedures to be followed.

## Personal Protective Equipment

- ☐ Safety glasses
- ☐ ventilation equipment or masks
- ☐ Proper footwear

## Possible Risk Factor

- ☐ Burns
- ☐ Hand injuries
- ☐ Cuts and Abrasions
- ☐ Eye injuries

- ☐ The student has been trained on this equipment.
- ☐ The student understands the required personal protective equipment to operate this equipment.
- ☐ The student is aware of the possible risk factors

Student signature \_\_\_\_\_

Teachers signature \_\_\_\_\_

Date of training \_\_\_\_\_

## APPENDIX A: HEALTH AND SAFETY RESOURCES

### IT'S YOUR JOB: YOUNG WORKERS

<https://www.labour.gov.on.ca/english/atwork/youngworkers.php>

Is the official website of the Ontario Ministry of Labour for young workers and new workers. Utilize this website to find out how to be safe at work. Find out how to be treated fairly! Includes key information on: Volunteers, Tips, What Young Workers should know, and more.

### WORKPLACE SAFETY AND INSURANCE BOARD

<https://www.wsib.ca/en>

Legislated by the Ontario government and responsible for administering the Workplace Safety and Insurance Act (WSIA). Governed by a Board of Directors made up of representatives of workers, employers and others.

Under the Resources tab, this website provides information on how WSIB makes decisions, by reviewing the Operational policy manual, Employer Classification Manual, and Adjudication support documents. You'll also find useful forms and fact sheets on a variety of topics, including benefit payments, and rights and responsibilities.

- ☐ Fact Sheets are also available:
- ☐ Fact Sheets for Workers
- ☐ Fact Sheets for Prevention
- ☐ WSIB Fact Sheets

### TAKE OUR KIDS TO WORK – THE LEARNING PARTNERSHIP

<http://www.tlp.on.ca>

Teacher's Guide; Workplace Guide

These resources have been custom designed to help teachers and workplaces prepare for Take Your Kid to Work day. The new booklets have an excellent section on activities to help prepare the students for a safe learning day.

## CANADIAN CENTRE FOR OCCUPATIONAL HEALTH AND SAFETY

<http://www.ccohs.ca/resources>

The Free Resources section is a collection of websites, databases, and other online resources suggested and reviewed by CCOHS. Many of the websites are designed and maintained by CCOHS, while some of the resources are provided by external, third-party providers.

- Purpose
- ☐ Promote the importance of workplace health and safety in Canada
  - ☐ Identify current and reliable health and safety information
  - ☐ Create and maintain an accessible, convenient, and easy-to-use resource to anyone who needs it
  - ☐ Provide access to information from a variety of sources including federal, provincial, and territorial governments, agencies, and non-profit organizations

### Target Audience

The Free Resources are useful to workers, employers, managers and supervisors, joint health and safety committees, workplace health and safety professionals, and students.

## HEALTH CANADA

<http://www.hc-sc.gc.ca>

Health Canada is the Federal department responsible for helping Canadians maintain and improve their health, while respecting individual choices and circumstances.

Health Canada administers many pieces of legislation and develops and enforces regulations under this legislation that have a direct impact on the health and safety of Canadians. The Department consults with the Canadian public, industry, non-governmental organizations (NGOs) and other interested parties in the development of these laws. Health Canada also prepares guidelines in order to help interpret and clarify legislation and regulations. Of particular interest would be regulations such as the Hazardous Product Act, Controlled Products Regulations, Environmental and Workplace Health.

## ONTARIO BUILDING CODE

[O. Reg. 332/12: BUILDING CODE \(ontario.ca\)](http://www.ontario.ca)

The Ontario Building Code's website has information on qualification and registration, available training, dispute resolution, news on recent code developments and more. The Ontario Building Code is administered by the Building and Development Branch of the Ministry of Municipal Affairs and Housing.

## CANADIAN STANDARDS ASSOCIATION (CSA)

<http://www.csagroup.org>

Standards contribute to safer homes, workplaces and public spaces. They address issues related to sustainability and the environment. And they encourage the adoption of new technologies and best practices that enhance trade and help make industry more competitive in the global marketplace. Standards help advance today, while anticipating tomorrow.

### CANADIAN SOCIETY OF SAFETY ENGINEERING (CSSSE)

<http://www.csse.org/>

The Canadian Society of Safety Engineering (CSSE) is the leading health, safety and environmental organization for professionals in Canada. They work with industry, governmental agencies, and other safety organizations to promote a greater awareness of health, safety, and environmental issues in workplaces and communities across the nation and around the world. Our vision is "An Advocate for Safety in Every Workplace".

CSSE's mission is to be the resource for professional development, knowledge and information exchange to our members, and the Canadian public.

### PROFESSIONAL ASSOCIATIONS

Professional Associations can be a great health and safety resource relating to discipline specific occupational health and safety. The following Tech Design related associations provide resources on professional practice relating to health and safety.

Professional Engineers of Ontario (PEO).... <http://www.peo.on.ca/>

Architectural Association of Ontario (OAA).... <http://www.oaa.on.ca/>

Ontario Certified Engineering Technicians and Technologists (OACETT)....

<http://www.oacett.org/>

Association of Registered Interior Designers of Ontario (ARIDO) .... <http://www.arido.ca/>

### Ministry of Labour, Immigration, Training and Skills Development

<http://www.labour.gov.on.ca/english/>

For news and information about Ontario's health and safety and employment legislation, the Ministry of Labour, Immigration, Training and Skills Development's website is an excellent place to visit. It provides current information on both employment standards and health and safety legislation, recent fines, alerts, etc. and allows you to ask a question that will be answered by Ministry staff. To directly access information for students, use the web address:

[http://www.labour.gov.on.ca/english/es/pubs/factsheets/fs\\_young.php](http://www.labour.gov.on.ca/english/es/pubs/factsheets/fs_young.php)

This section of the Ministry of Labour, Immigration, Training and Skills Development's website ensures that students are aware of their rights and obligations and their employer's rights and obligations under the Occupational Health and Safety Act and the Employment Standards Act. It includes: young worker safety education information; information for working students – know

your rights and obligations; information for new workers and students working in Ontario; fact sheets for employees; your guide to the Employment Standards Act; and links to related websites.

#### ONTARIO SCHOOL BOARDS INSURANCE EXCHANGE

<http://www.osbie.on.ca>

The primary goals of the Exchange are to insure member school boards against losses, and to promote safe school practices. The Ontario school “Risk Management at a Glance” material is intended to provide guidance and direction in the major risk management areas facing school administrators, principals, vice-principals, teachers and all other school staff on a daily basis.

## APPENDIX B: OCTE SAFETYNET BLANK TEMPLATE

### Overview

A sample of a blank safetyNET template provided by the Ontario Council for Technology Education as well as their Materials and Resources sheet has been provided here as an additional resource for computer technology teachers.

Completing it once for a risky project can take teachers through a pre-project planning process, a review of the materials in their shops, the suppliers and processes they use, and encourage documentation of their safety training for themselves, their students, and classrooms. It collects safety information in one place for their own use, and respects their experience, pedagogy, and professionalism. It's a crucial step in standardizing safety training in your technology program at your school and can assist in collegial communication in your department.

Please note that the online updated version is available at <https://www.octe.ca/en/resources/safety/safety-net>, however any teacher that considers and documents their answers to the questions will have created an important document for their personal professional practice. It's also available in fillable .pdf format, and is also available in French from OCTE

### Establishing A Safety Binder

The goal is a safety binder that teachers keep in their rooms as evidence of due diligence taken towards safety in the classroom.

Assembled safety binders often include teacher/room/board specific:

- safetyNET Template
- Project Specific Safety Resources
- SDS Sheets
- Student Safety Training Tracking Sheets
- Permission Forms Copies
- Class Lists
- Equipment Maintenance/Manuals
- Training Quiz Samples
- Teacher Training Documentation Copies
- Emergency Procedures Docs
- Board Repair Contacts
- Room Safety / PPE Location Map

## Starting Your safetyNET

TDJ Subject Area: Tech department heads can provide leadership asking teachers to consider the following questions to choose a focus for completing their own safetyNET.

- What are the most risky projects I do in my classroom? (List them here.) ☐
- Which of these use the riskiest materials?
- Which of these use the highest risk-associated equipment?
- Which of these include recycled, found, repurposed, or donated materials?
- Which of these is the hardest to train and track the kids for safety?
- Reflecting on this listing, which project do you think you may want to do a safetyNET on?
- What resources of mine would make it easier - instructive for another teacher to try this project?
- What would be the best “safety lens” advice I could give for another teacher from my experience?



## safetyNET Online Lesson Plan Sample (Note links do not work in this document)

### safetyNET STEP 1: Tell Us About You

First Name: \_\_\_\_\_

Last Name: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

Ontario School Board: \_\_\_\_\_

School: \_\_\_\_\_

Community

☐

Urban

☐

Suburban

☐

Rural

Number of Students:

Student Work is Completed (individually, pairs, groups, mixed methods)

Mixed Methods	▼
------------------	---

☐

I agree to the Terms and Conditions and have read the Teacher Guidelines.

### safetyNET STEP 2: Describe Your Lesson

Classroom Management Pre-Planning

1. Provide a descriptive title for your learning activity.
2. Choose the length that best describes your lesson.
  - Full semester
  - Multiple weeks
  - One week
  - One period

3. Choose the Ontario course code (e.g.).

TEJ - Computer Engineering	▼
----------------------------	---

4. Provide learning goals of the activity.

Names of Resource Files Included: (Please format as .pdf where possible.)

5. Generally, describe your classroom lab setup with main equipment and areas.

6. There is a link [here](#) to your subject area's full Overall and Specific required Ministry Expectations. Click [here](#) for safety expectations summarized for each tech course code. These will create a pop-up window for copying and pasting into the field below. Copy and paste some safety expectations your lesson will cover.

7. There may also be local by-laws or staff guidelines applicable to your school community in general that affect how you teach your subject area for health and safety. Being in an urban or rural environment can offer unique challenges to a technological education program. Your department or school may also have a health and safety manual you can attach as a file later. Include any details or best practices here on what you refer to.

8. Coming from industry and experience as a technological educator, there is prior teacher knowledge that you would recommend for your classroom, focused on health and safety. Include information on recommended certifications for your subject area.

9. Many teachers use these as a basis of training for prior student knowledge. Check off which ones you use currently. A pop-up window is available through these links.



Passport to Safety



Introduction to WHMIS2015

10. Prior to specific project work, describe your general introductory unit on health and safety in your classroom.

11. Check off what Personal Protective Equipment may be applicable in your classroom in general for health and safety.



safety glasses (shatterproof - may need side guards)

coveralls / lab coat / apron (protective clothing) gloves

(latex and standard) gloves (chemical resistant) welding

gloves and face shield dust mask (breathing protection)

☐ respirator (breathing protection)

☐

☐ appropriate footwear (may imply steel-toed work boots or closed toe and heel shoes)

☐ hair net hair tied back

☐

☐ hearing protection - ear plugs

☐

removing jewellery and fashion accessories

☐ hard hat safety harness reflective vest

☐

☐ no electronic devices

12. Describe your student safety training assessment strategies. Click [here](#) for a pop-up to review the Growing Success document that defines assessment for learning and as learning.
13. Some technological classroom areas are more complex and need layout planning, maintenance, and special resources available, especially when sharing rooms. Detail general housekeeping, organization standards and student clean-up procedures from your experience.
14. Detail safe storage facilities in your classroom for course specific materials.
15. Explain any special learning considerations and best practices for your classroom focused on safety. Are there left-handed students in your class? You may naturally include accommodations and modifications. Showcase special approaches or methods you use for exceptional students, multiple-intelligences, differentiated instruction, ESL, gifted, or physically challenged students.
16. Include information on your safety procedures for disposal of waste materials. This could include food scraps, hairstyling chemicals, dust collection, combustible wipes, or waste oil.
17. Company's coming! Educational Assistants, volunteers, student teachers, and classroom guests with administrators are in your classroom. Provide your experience on elements of safety training that need to be communicated to these participants for your subject area such as wearing safety glasses, maintaining distance from machines, or how to communicate an emergency or issue to the teacher.
18. Emergency procedures to pre-plan in general for your technological education classroom depends on your subject area. There may be steps for students, steps for administration, for assisting teachers, or directions for emergency assistance arriving at school. Detail how you cover these in your classroom. Include fire exits, extinguishers, first aid station, eye wash

station, and electrical shut-off switches (panic buttons). Possibly detail AED location (if available) and first aid trained staff member locations for your records.

19. Does your Board have a technological project approval process?

☐

Yes

☐

No

☐

Unknown

20. Select (all that apply) that complete equipment inspections in your board.

☐

Teacher

☐

Department Head

☐

Board Instructional / Subject Area Leader

☐

Board Facilities Teams

☐

Independent Contractors

☐

Ministry of Labour

21. Select Federal and Provincial Safety Legislation and Policies, Government Departments, and Associations which may be applicable to your subject area. Click on any of them to open up a pop-up window to reference their website. Consider adding any resources you find to your lesson.

☐

Health Canada

☐

Ministry of Labour

☐

Ontario Workplace Safety and Insurance Act Food

☐

Safety and Quality Act

☐

Ontario Health Protection and Promotion Act

☐

Ontario Highway Traffic Act

☐

Ontario Fire Code

☐

Ontario Building Code

☐

Workplace Hazardous Materials Information System (WHMIS2015)



Workplace Safety and Insurance Board (WSIB)



Occupational Health and Safety Act (OSHA)



Apprenticeship and Certification Act (ACA)



Canadian Standards Association (CSA)



Canadian Society of Safety Engineering (CSSE)



Ontario Service Safety Alliance (Hospitality and Tourism) (OSSA)



Canadian Centre for Occupational Health and Safety (CCOSH)



Construction Health and Safety Association of Ontario (CSAO)



Ontario School Boards Insurance Exchange (OSBIE)



Industrial Accident Prevention Association (IAPA)



Transportation Health and Safety Association of Ontario (THSAO)



Health Care Health & Safety Association of Ontario (HCHSA)

That's the end of general classroom management info. You can copy and paste the content from this section to any project you submit to the SafetyNET.

That's So Cool! When Do We Start?

22. Check off planning tasks you complete for this lesson.



examine materials list (new, used, recycled materials) review tool use



plan (power and hand tools) consider special preparation of



recycled materials for this project. review hazardous materials use



– WHMIS2015, SDS (attach files later) safety check on specific



equipment review chemical and fire safety procedures prepare



tools



count or measure materials, evaluate efficiencies check



'past due' dates on supplies



check student-accessible material supply areas are safe re-do a

☐ safety demonstration



confirm all students completed training diagnostic assessment



confirm web resources and handouts are current reconsider



assessment and evaluation strategies



plan direct supervision time for difficult or high-risk production steps



plan direct supervision for flammable / toxic / corrosive materials handling



plan safe storage of in-progress student projects plan cut off times for lab



cleanup to begin plan waste disposal, recycling



plan debrief on safety risk experiences with students



detail notes for teacher sharing classroom/lab

24. Detail instructional strategies and assessment strategies for focusing on safety during this learning activity. Consider any IEP considerations applicable in your classroom.
25. Define the materials and equipment used for this learning activity. You can use the blank form that's provided [here](#) and save it to make it your own. The layout helps you collect details showing the materials and equipment. It also provides space for equipment maintenance schedules, disposal of waste materials, training tracking, shielding or guarding details.
26. Include any best practices or tips, tricks, and advice in your experience of completing this learning activity. Focus your answer on how you document safety training and share information about your shop with other tech teachers. That's an OCTElab safetyNET!
27. Provide a short description of your project that can go with a reference image for the database. (Max 256 characters.)

### safetyNET STEP 3: Add Files and Videos

Please attach a project image for us to display with your short description in the database. Please upload any supporting documents including safety components, lesson materials, assessment tools, digital resources, images, or videos. To bring your lesson to life, include online videos URL link files on the lesson plan page. Add as many as you like.

Do you have a safety feature map of your classroom you can share? Attach it here! Find the Safety Data Sheet (SDS) for any of your materials clicking and searching [here](#). Save it and add it to your digital resources to attach with your lesson.

The Ontario Ministry of Labour makes available a resource named Live Safe! Work Smart! It has a wide range of general safety and subject-specific resources available for use in the classroom and beyond. Click to open a pop-up and copy and paste links that are your favorites here or download a resource you can use with this lesson and attach it later. You can also add any other URL links here that you think enhance this safety learning activity.

## SafetyNET STEP 4: Tag Your Lesson

Add your own descriptive tag(s) to help users search for content like yours. Print your lesson to document your safetyNET for your classroom. [Submit](#) your safetyNET lesson. Plan to update lesson content or add digital resources later with your user login. Think about adding another lesson! Remember, most of your general classroom info is already in. You can 'Save As' and 'Modify' to submit a new lesson with new resources!

## SafetyNET – Materials, Physical Resources Planning Sheet

Teachers can copy and add rows to this blank form to address specific project needs and include it in their safety binder.

PROJECT / LEARNING ACTIVITY TITLE:

COURSE CODE AND TITLE:

VERSION PREPARED DATE:

SUBMITTED BY:

CONTACT:

### MATERIALS LIST

MATERIAL	QUANTITY	DESCRIPTION	SOURCE	WHMIS2015 SDS ATTACHED	SAFE STORAGE	WASTE DISPOSAL
			<input type="checkbox"/> new, purchased <input type="checkbox"/> new, donated from community, industry <input type="checkbox"/> recycled from inside school <input type="checkbox"/> recycled from outside school  PREPARATION REQUIRED FOR USE:  DETAILS:	<input type="checkbox"/> Y <input type="checkbox"/> N		



## PHYSICAL RESOURCES USED

EQUIPMENT, TOOL, MACHINE	SUBJECT – SPECIFIC NEEDS	INSPECTED FOR SAFETY FEATURES	STUDENT TRAINING PLAN IDENTIFIED	MAINTENANCE SCHEDULE
NOTE: TEACHER EXPERIENCE AND SAFETY PROFICIENCY IS ASSUMED.  DETAIL EQUIPMENT:  MANUAL APPLICABLE / AVAILABLE (LOCATION):	MACHINE GUARDING AND SHIELDING APPLICABLE  <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A  EMERGENCY STOP / PANIC BUTTON APPLICABLE  <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A  LOCK-OUT TAG APPLICABLE  <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A  OTHER (SUBJECT SPECIFIC)  <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	<input type="checkbox"/> Teacher  DATE: _____  <input type="checkbox"/> Board  DATE: _____	DETAIL STEPS:  Student attended teacher safety instructions, lessons, demonstration (notes recorded)  Student passed oral or written assessment (test)  Student demonstrated safe setup and operation of equipment to teacher  Student prepared and delivered power point presentations on all class tools and machines  Student granted permission to use equipment  SIGNAGE: safety sign posted  RESOURCES: safety lesson tool safety video tool PowerPoint presentation manual  FREQUENCY OF	DAILY:  WEEKLY:  MONTHLY:  ANNUALLY:  CONTACT FOR REPAIR:

			<p>RETRAINING ADVISED: Students should be retrained every semester</p> <p>Safety passports expire at the end of every semester</p>	
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The Ontario Council for Technology Education wishes to acknowledge the contribution of the individuals that participated in the development and refinement of this SAFEdoc.

## References

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<http://www.edu.gov.on.ca/eng/curriculum/secondary/techedemphasiscourses.pdf>

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Start an Apprenticeship in Ontario <https://www.ontario.ca/page/start-apprenticeship>

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