Safe Activity Foundations in Education Document (SAFEdoc)

TRANSPORTATION TECHNOLOGY (TRANS)

Revision July 2003

Table of Contents

Disclaimer

This material is designed to help teachers implement the new Grade 12 secondary school curriculum, but is fully adaptable to any Science and Technology and Technological Education subject or course. This material, created by members of the Ontario Council for Technology Education (OCTE) subject association, is intended as working guides 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 or 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.

All materials within these safety related documents 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.

Safe Activity Foundation in Education: Transportation Technology

This ***SAFEdoc*** is designed to provide safety data sheets, posters, safety passports, and safety resources for all technology educators. While developed as a resource for the **Grade 12 Course Profiles,** and as an additional resource for the **Grade 11 Activity Resource Documents (ARMdocs)**, it is available for any grade level or any technology education environment. Each Grade 11 ARMdoc lists specific safety sheets that should accompany the project notes for that activity.

The ***SAFEdoc*** is divided into five separate disciplines:

1. Communications, Computer Engineering and Computer and Information Science (COM)
2. Construction, Manufacturing and Technological Design (FAB)
3. Health and Personal Services (HPS)
4. Hospitality and Tourism (HOST)
5. Transportation (TRANS)

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 Transportation Technology teacher may need to utilize wood shop equipment, therefore may need to refer to the FAB **SAFEdoc**. Teachers are encouraged to download ALL ***SAFEdocs***.

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 (http://www.octe.on.ca) periodically.

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 **Live Safe! Work Smart!,** the **Young Worker's Awareness Program**, and industry associations dedicated to safe working practices. See the chart of safety resources to effectively use the Safedocs to design safety management systems for specific facilities and programs.

A safety management system ensures 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 band saw, 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. **Safety Data Sheets** 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.

See Appendix A for information about related safety resources, such as **Live Safe, Work Smart**; the **Young Workers Awareness Program**, the Ministry of Labour and other organizations dedicated to safe practices.

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.

The following chart illustrates various types of safety resources that all contribute to a safety management system in technological education facilities.

Health and Safety Resources and Curriculum

These resources identify safety rules associated with hazards and processes. They are applicable to a wide range of occupations and situations.

e.g. *Occupational Health and Safety Act,1990 ,Live Safe! Work Smart!*

Based on the Ontario curriculum this resource contains safety lessons for technology subjects

Classroom Safety Resources

These resources identify safety policies and procedures that ensure the safety of people in schools.

e.g. WHMIS Training Sessions, Board Safety Policies, **SAFEdocs-** these resources provide a framework for developing safety procedures in school classrooms

Equipment and Hazard-Specific Safety Rules

These resources are Just-in-Time (JIT) safety rules. They are applicable to specific equipment in the facility and may apply to specific hazards associated with a program emphasis.

These rules are developed at the classroom/school level to implement safe work practices. They may be adapted from a variety of sources including equipment manufacturer's manuals. A summary is often posted near equipment.

Safety Management

The teacher develops these resources. The daily classroom safety routines and policies are based on the above safety resources and applied to each individual facility/classroom.

Protocols developed to teach safe behaviour directly should include managing safe work practices and behaviour through demonstration and reinforcement of safe working procedures, establishment of clear safety rules, safety passports, assignments, quizzes, and research.

Responsibilities for Safety

[from the Ontario Ministry of Education Technological Education, The Ontario Curriculum, Grades 11 and 12, 2000, page 200]
"Health and safety are of paramount importance in technological education programs. As part of every course, students must be made aware that health and safety are everyone's responsibility – at home, at school, and in the workplace. Before using equipment, students must be able to demonstrate knowledge of the equipment being used and the procedures necessary for its safe use. Personal protective gear should be worn as appropriate.

Classroom practice and the learning environment should comply with relevant municipal, provincial, or federal health and safety legislation, including the following:

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

Teachers must make use of a wide range of available and relevant resources to make students sufficiently aware of the importance of health and safety. These can include materials from the following:

- Workplace Safety and Insurance Board (WSIB)
- Industrial Accident Prevention Association (IAPA)
- Ontario Ministry of Labour (MOL)
- Canadian Centre for Occupational Health and Safety (CCOHS)
- appropriate safe workplace associations (SWAs), such as the Construction Safety Association of Ontario (CSAO), the Ontario Service Safety Alliance (OSSA), the Transportation Safety Association of Ontario (TSAO), the Electrical Utilities Safety Association (EUSA), and the Workers' Health and Safety Centre (WHSC), and clinics, such as the Occupational Health Clinics for Ontario Workers. "

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.gov.on.ca/LAB/english/hs/ohsaguide/index.html

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 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.
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
WHMIS	(Workplace Hazardous Materials Identification System)…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 WHMIS binders, symbols and MSDS sheets
- 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 Technological Education, The Ontario Curriculum 2000, for Grade 12 TTJ4C Transportation (College) and TTJ4E Transportation (Workplace)

Transportation Technology, Grade 12, College Preparation, TTJ4C

Skills and Processes

Overall Expectations

SPV.01 apply effective work practices and procedures as part of a team when developing models of mass-transit systems;

Impact and Consequences

Overall Expectations

ICV.02 effectively evaluate and implement safe work practices when performing transportation-related tasks;

ICV.03 identify the role of health and safety legislation in transportation technology programs in schools and in the transportation sector;

Specific Expectations

Impacts

IC1.01 identify potential harmful consequences of specific mass-transit activities for the individual and for society, and formulate alternatives to minimize these consequences;

Safety and Legislation

IC2.01 identify safe work practices and recommend the safest and most appropriate method for a particular operation;

IC2.02 develop and conduct effective safety audits and inspections of the school transportation facility and implement a plan to address any deficiencies;

IC2.03 develop an effective emergency action plan for the school transportation facility;

IC2.04 describe the Occupational Health and Safety Act (OHSA) and identify its implications for the school transportation facility and the transportation sector workplace;

IC2.05 analyse and describe the issues related to transportation technology addressed in the Workplace Hazardous Materials Information System (WHMIS).

Safety Expectations (cont)

Transportation Technology, Grade 12, Workplace Preparation, TTJ4E

Skills and Processes

Overall Expectations

SPV.02 consult appropriate reference materials when servicing and repairing systems;

SPV.04 communicate ideas and transmit information about materials and specifications effectively when working with others;

Specific Expectations

Applied Work Practices and Procedures

SP2.01 use correctly, store safely, and maintain in good working order the measurement, hand, power, machine, and pneumatic tools and equipment required for service, repair, and modification tasks;

SP2.02 safely operate a variety of heating, cutting, and welding equipment for service repair and modification tasks;

SP2.03 systematically troubleshoot problems arising from the service, repair, and modification of vehicles by organizing the variables into the following categories: input, process, and output.

Communication Skills

SP3.03 communicate in a clear, concise, and accurate manner when working with colleagues and clients;

Impact and Consequences

Overall Expectations

ICV.02 develop and conduct effective safety audits and inspections of the school transportation facility and implement a plan to address any deficiencies;

ICV.03 describe the role of legislation related to the transportation sector and identify its implications for the school transportation facility and for the transportation sector generally;

Specific Expectations

Impacts

IC1.01 evaluate any negative environmental impact of procedures used in the repair and service of vehicles, and suggest environmentally friendly alternatives;

IC1.02 recommend an effective process for collecting and recycling materials and fluids;

IC1.03 handle waste products safely and be able to implement an emergency action plan in the event of a minor spill;

IC1.04 identify the procedures required to eliminate the release of ozone-depleting substances by applying provincial or federal standards during the servicing of

mobile air-conditioning units.

Safety and Legislation

IC2.01 demonstrate good housekeeping practices in the work environment by cleaning up spills and leaks, keeping areas clean and clear of obstruction, and storing tools and equipment so that the potential for injuries is minimized;

IC2.02 use safe work practices in the transportation technology program;

IC2.03 develop comprehensive safety checklists for applied work practices and procedures;

IC2.04 use all required protective clothing and gear (e.g., to protect the eyes, hands, head, feet, and respiratory system) when working in the transportation sector;

IC2.05 identify and adhere to the aspects of the Occupational Health and Safety Act (OHSA), the Workplace Hazardous Materials Information System (WHMIS), and the Motor Vehicle Repair Act that relate to procedures and operations used in the school transportation technology facility.

Sample 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.

Safety Awareness

Personal Protective Equipment [PPE]

1. Avoid wearing loose, baggy clothing or personal accessories, such as watches, chains, rings, or other jewelry, no ties.
2. Wear safety glasses, shields and gloves and other PPE as per instructed.

Lift Support and Movement

1. Move a heavy load only with teacher approval.
2. Use assistance to lift items over 20 kilograms (40 pounds) or two metres (six feet) in length.
3. Secure and support with approved stands only.

Machine Tools and Energy

1. Do not direct compressed air or gases towards anyone or towards exposed skin or clothing.
2. Operate equipment, tools or machinery only after receiving proper instruction and permission from the teacher.
3. Never leave equipment or machinery running unattended.
4. Do not attempt to repair any electrical connections.
5. Lockout any equipment which is being repaired.

Storage and Handling of Compressed Gases

1. Complete WHMIS, symbols and recognition instruction.
2. Maintain all cylinders in an upright position, chained and secured.
3. Change gas bottles only with teacher supervision.

Storage and Handling of Chemical Substances

1. Understand and follow WHMIS, and MSDS instruction before handling chemical substances.
2. Secure all flammable and corrosives in approved cabinets.
3. Maintain good housekeeping practices when dealing with chemical substances.

Waste Disposal and Recycling

1. Be responsible for cleaning up workstations, tools and the shops.
2. Sort waste by category as required using approved containers.
3. Sort recyclable liquids and solids into proper approved storage containers

Sample Student Conduct Agreement

I, _____ agree to:

Ensure a safe workplace

1. Inform teachers of all injuries, damaged tools and potentially dangerous situations.
2. Make sure I know all fire exits and power shutdown switches and how to use them during emergency situations.
3. Not compromise the safety of others through horseplay or aggressive action.
4. Only use equipment when properly trained, always with any necessary personal protective equipment, and when I fully understand all related safety issues
5. Ask for assistance from the teacher when I am unsure of the proper procedures or health and safety issues

Prescribed and Non-prescribed Medications

1. Report any use of prescription medications and will inform teachers of any possible side effects of the medication [e.g. penicillin, phenobarbital etc.]
2. Report any use of non-prescription medication and any possible side effects of the medication [e.g. Reactine, Benadril, any cough syrups etc.]
3. Never enter a shop or lab carrying, or under the influence of illegal substances

Consequences for Improper Action

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 temporary removal from the class or shop.
Note: Teachers must ensure that the ***Consequences for Improper Action*** aligns with school and board policies.

I have read the above and understand the expectations and consequences.

Student signature: _____

Parents signature _____

Date: _____

SECTION 2: SAMPLE SAFETY DATA SHEETS

This section contains Safety Data 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 sheets for inclusion in Course Profiles or Activity Resource Management (ARMdoc) documents.

Safety Data Sheets contain information specific to various common workshop tools and procedures. Before using them, ensure they accurately describe your own particular facilities and equipment. Make sure equipment specific information aligns with manufacturers' safety precautions.

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.

Arbor Press

1. Wear **EYE PROTECTION AND OTHER PERSONAL PROTECTIVE EQUIPMENT** when using a press.
2. Mount all work to be pressed squarely.
3. Choose the appropriate opening for the shaft size to slide through.
4. Apply pressure in a steady manner; do not hammer down with the handle.
5. Oil the shaft and bearing while applying pressure.
6. Maintain pressure until the bearing is seated or disengages.
7. If you are pressing out a bearing you should be aware that the shaft may fall to the floor, so watch where your feet are placed.
8. If the bearing doesn't move make the teacher aware of the problem. Heat may be applied to the bearing under supervision.
9. Be aware that if you force too hard you will strain yourself or you may overtax the equipment and it may fail. This may result in the equipment breaking or the bearing flying apart resulting in injury. Injury could result from equipment failure.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Arc Welding

1. **PROTECT YOUR SKIN** by wearing safety footwear and leather or flame resistant canvas coat and gloves.
2. **PROTECT YOUR HEAD AND EYES** by wearing an approved welding helmet equipped with a minimum shade 10 lens and protective cover glass. Observers must also wear approved **EYE PROTECTION**.
3. **STUDENTS WEARING CONTACT LENSES MUST NOT USE AN ARC WELDER** or be exposed to its arc.
4. Always place a suitable barrier around the work area to protect others from arc radiation. Use shaded screens (shade 8 minimum) when possible.
5. Be aware of others at all times when welding. Notify others that you are about to weld. This is very important if you are not in a protected welding booth.
6. When welding, the area and equipment must be free of water and your footwear dry.
7. Ensure all connectors are fastened securely.
8. Ensure the ventilation system is turned on and working.
9. Check for flammable substances before beginning to weld.
10. Always ground to your work piece and be aware of any bearings installed on the work piece.
11. Take breaks to help relieve arm fatigue.
12. Always pick up hot pieces using tongs or pliers.
13. Ensure eye protection is in place when chipping “slag” or grinding a weld.
14. Always ensure the teacher is aware of any equipment problems.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Arc/MIG/TIG Welding

1. **PROTECT YOUR SKIN** by wearing leather or flame resistant canvas coat and gloves. **PROTECT YOUR HEAD AND EYES** by wearing an approved welding helmet equipped with a minimum shade 10 lens and protective cover glass. Observers must wear **EYE PROTECTION** (as above).

2. STUDENTS WEARING CONTACT LENSES MUST NOT USE AN ELECTRIC WELDER or be exposed to the arc.

3. All welding equipment must be in good operating condition. Never use damaged equipment.

4. **NEVER STRIKE AN ARC** unless you and the onlookers have protective lenses in place.

5. Always place a suitable barrier around the work area to protect others from arc radiation. Use shaded screens (shade 8 minimum) when possible. Be aware of others at all times when welding. Notify others that you are about to weld. This is very important if you are not in a protected welding booth.

6. When welding the area must be free of water and your footwear dry.

7. Ensure all connectors are fastened securely.

8. Ensure the ventilation system is turned on and working.

9. Check for flammable substances before beginning to weld.

10. Always clamp ground cable to your work piece. Be aware of any bearings installed on the work piece.

11. Take breaks to help relieve arm fatigue.

12. Always pick up hot pieces using tongs or pliers.

13. All welding equipment must be in good operating condition, never use damaged equipment. Always ensure the teacher is aware of any equipment problems.

Battery Charging

1. Wear **PERSONAL PROTECTIVE EQUIPMENT INCLUDING SAFETY GLASSES** when working around batteries. **REMEMBER, BATTERIES POSE POTENTIAL DANGERS RELATING TO CORROSION, CHEMICAL BURNS, AND EXPLOSION**.
2. Use fender covers to protect vehicles' painted surfaces.
3. Make certain the battery is filled with distilled water if it is a maintenance style of battery.
4. During cold weather make certain the battery is not frozen.
5. **AVOID SPARKS AND FLAME SOURCES** around the battery and cable areas.
6. Keep workspace clear of debris and obstructions.
7. Disconnect battery charger from alternating current source (wall outlet) before battery clamps are connected or disconnected. Remove negative cable from battery if battery is in the car.
8. Before hooking-up charger, turn charger off. Make positive battery clamp connection first and the negative connection last.
9. Charge batteries only in a well-ventilated area. Set controls to the correct voltage, recommended time, and the correct charging rate. **DO NOT OVERCHARGE THE BATTERY**!
10. When removing charger, turn charger off first. Remove negative battery clamp connection first, and the positive connection last.
11. Always make the teacher aware you are going to use the charger.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Brake Lathe

1. Accurately measure lathe or rotor before resurfacing and compare with manufacturer's specifications.
2. Put on your **FACE SHIELD OR SAFETY GLASSES** before you start the lathe.
3. Use the correct centering cones. Center the drum or rotor and securely fasten it according to lathe manufacturer's procedures and guidelines.
4. **NEVER LEAVE A WRENCH** or any other tool sitting on the machine. The wrench may fly out and cause injuries when the machine is started.
5. Do not use a wrench or other object to touch revolving work or parts.
6. Never attempt to measure work, feel the surface, or adjust a cutting tool while the lathe is running.
7. Always stand erect to keep your head away from flying metal chips.
8. Never stop the drum/rotor with your hands: allow it to stop by itself.
9. Accurately measure lathe or rotor after resurfacing and compare with manufacturer's specifications. A unit that is undersize is unsafe and must be discarded.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Coil Spring Compressor

CAUTION: SERIOUS INJURY POTENTIAL. COMPRESSED SPRINGS BREAKING FREE CAN CAUSE INJURIES TO OPERATING STUDENT, AS WELL AS STUDENTS IN THE IMMEDIATE AREA.

1. **WEAR PERSONAL PROTECTIVE EQUIPMENT INCLUDING SAFETY GLASSES** when using a coil spring compressor.
2. Mount the compressor in an appropriate sized vice.
3. Make certain the spring is fitted into the compressor properly. **HAVE TEACHER CHECK YOUR SET-UP** before compressing the spring.
4. Always compress slowly.
5. Be aware of other students in the work area.
6. Ensure the spring is compressing in a straight line.
7. Make certain hands and fingers are free and clear.
8. Once the spring is seated correctly, decompress slowly.
9. If the spring fails to compress or decompress correctly, **STOP AND SEEK ADVICE FROM YOUR TEACHER.**
10. Never use this equipment without first informing your teacher.

AT ALL TIMES – IF IN DOUBT, SEE 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. Select only drills that are sharp, in good condition and suitable for the job.

4. Remove **CHUCK KEYS/WRENCHES** have been removed from the drill chuck before starting the machine.

5. **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.

6. 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.

7. If work slips from the clamp, never stop it with your hands. Never reach around or in back of any rotating drill.

8. 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.

9. If the drill sticks in the work, stop the motor and rotate the drill by hand to free it from the work.

10. File or scrape all burrs from drilled holes. Be sure that the file is fitted with a proper handle.

11. Always clear away chips and curls with a **HAND BRUSH** – not your hands.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Electronic Test Equipment

1. **WEAR PERSONAL PROTECTIVE EQUIPMENT INCLUDING SAFETY GLASSES** when using electronic test equipment.
2. Make certain your work area is clean and clear of debris.
3. Ensure participants or observers are wearing personal protection equipment.
4. Follow guidelines for equipment hook-up provided by the equipment's manufacturer. **INCORRECT TEST EQUIPMENT CONNECTIONS MAY RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE**.
5. Before making any connections make certain the equipment is in good condition. Check cords and electrical terminal points for visible damage.
6. Connect + to + and – to -- . Make sure no sparks are created around the automobile's electronic systems or storage battery.
7. Follow the automobile manufacturer's testing procedures as found in the appropriate repair manual. **INCORRECT TESTING PROCEDURES MAY DO SIGNIFICANT DAMAGE TO EXPENSIVE ON-BOARD ELECTRONIC AND COMPUTER COMPONENTS.**
8. Never take the test equipment apart. **SOME TEST EQUIPMENT COMPONENTS HAVE HIGH VOLTAGE CIRCUITRY THAT IS CAPABLE OF GIVING SEVERE ELECTRICAL SHOCKS.**
9. Never place test equipment or leads near hot surfaces or rotating engine parts.
10. When testing procedures are complete, safely disconnect all leads and carefully store equipment away.

AT ALL TIMES – IF IN DOUBT, SEE 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.

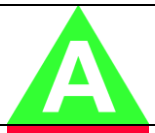
Location of Emergency Exits and Fire Alarms:

Locations of Emergency Stops:

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Fire Extinguishers

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

CLASS A **water**		**Ordinary Combustibles**: paper, cloth, wood, rubber, many plastics.
CLASS B **CO2**		**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.

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) See WSIB Regulation 1101, Required first aid kit items (at http://www.wsib.on.ca/wsib/wsibsite.nsf/Public/PreventionYHSRR)

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	

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Floor Jacks

WARNING: IMPROPER USE OF FLOOR JACKS CAN LEAD TO SERIOUS INJURY OR DEATH

1. **WEAR PERSONAL PROTECTIVE EQUIPMENT INCLUDING SAFETY GLASSES** when jacking up a vehicle.
2. Make certain the work area is free and clear of parts and debris.
3. With the vehicle on a level surface, put the vehicle's emergency brake on and block the wheels.
4. All vehicle doors must be closed before jacking vehicle.
5. Refer to the vehicle manufacturer's lifting points for raising the vehicle and place jack securely under specified axle, body, or frame area.
6. Raise vehicle to desired working height, checking periodically to ensure jack stays positioned. No person is to be completely or partially under the vehicle until it is secured.
7. Position the safety stands under frame or axle area using a push rod.
8. Lower the vehicle slowly onto the stands and ensure the stands are correctly placed and they are carrying an even distribution of weight. Push on bumper to check for stability before proceeding under vehicle. Be aware of the exit points from under the vehicle. **HAVE THE TEACHER CHECK YOUR SET-UP BEFORE PROCEEDING**.
9. Vehicles can be hot; caution should be used while working under vehicles.
10. Before lowering a vehicle ensure everyone is clear and away from pinch or contact points.
11. Make teacher aware you are starting to jack a vehicle.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

General 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, clean it, or use absorbent materials. You are responsible for prevention of injuries.

5. Never block fire exits, fire pull alarms, doorways, aisles, and electrical breakers of machine switches for any reason at any time.

6. Oil, gas, and other vehicle fluids all have proper storage containers.
   Make sure you use them.
   Never mix chemicals.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Hand Grinders

1. **WEAR PERSONAL PROTECTIVE EQUIPMENT INCLUDING GLOVES AND FACE SHIELD OR GLASSES** when using a grinder.
2. Check the grinder disk for any flaws before using.
3. Ensure that the grinder disk is secured and seated properly on the arbor
4. Check the immediate area for any fire hazards such as flammable materials, liquids or batteries.
5. Make sure you are at least 6 metres (20 feet) away from other workers.
6. Start the grinder off the work.
7. Grip the grinder solidly with two hands (beware of the torque). Also make sure you have a solid stance before starting to grind.
8. Aim the sparks towards the floor and away from others.
9. When you have finished grinding raise the grinder off the work and allow it to stop on its own.
10. If the grinder is dropped during use it should be thoroughly inspected by the teacher before being used again.

AT ALL TIMES – IF IN DOUBT, SEE 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. 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** so they are always ready when you need them.
3. Never leave tools on floor, hanging over edges, on ramps or hoists where they could be forgotten or cause a tripping hazard.
4. When tools become worn or damaged, they should be repaired or replaced immediately. Show your instructor.
5. Use chisels, knives, blades that are sharp. Do not use blunt tools.
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 as a screwdriver.
7. Files should not be used as pry bars – they are extremely brittle and when breaking will release fragments which could injure or blind you.
8. **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, SEE YOUR INSTRUCTOR

Hoist

WARNING: IMPROPER USE OF VEHICLE HOIST CAN LEAD TO SERIOUS INJURIES.

1. **WEAR PERSONAL PROTECTIVE EQUIPMENT INCLUDING SAFETY GLASSES** when raising a vehicle on the hoist.
2. **ONLY THE TEACHER IS ALLOWED TO DRIVE VEHICLES IN AND OUT OF SHOP.**
3. Students must be out of the safety zone surrounding the hoist when the vehicle is entering.
4. The vehicle must be aligned properly with the hoist as per the hoist manufacturer's guidelines and procedures.
5. The vehicle must have the ignition switch turned off and the doors closed before being raised.
6. Ensure the hoist arms and locks are in place and secure before raising the vehicle. **HAVE THE TEACHER CHECK YOUR SET-UP**.
7. Raise the hoist until the wheels of the vehicle clear the ground; shake the vehicle to check for stability. If the vehicle is stable,raise the hoist to working height.
8. **INSTALL SAFETY STANDS BEFORE ANYONE PROCEEDS UNDER VEHICLE, OR REPAIRS ARE ATTEMPTED**.
9. Only students assigned to the task may be in the hoist area.
10. Caution should be used under the vehicle as you may injure head and hands.
11. Caution should be used because some automobile parts may still be hot.
12. Do not place tools and parts on the hoist frame as they may fall.
13. Clean up the area when you are finished working on the vehicle and before you lower it.
14. The teacher must be made aware when you are about to raise or lower the hoist.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Machinery 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 machine.

9. Report all **UNGUARDED AND INADEQUATELY GUARDED** equipment promptly to your instructor.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Metal Cut Off (Chop) Saw

1. **WEAR PERSONAL PROTECTIVE EQUIPMENT INCLUDING GLOVES AND FACE SHIELD OR GLASSES** when using a metal chop saw.
2. All jewelry must be removed, and long hair tied back securely.
3. Stand to the side of the disc assembly when operating the saw.
4. Students who are left-handed should use their right hand for cutting operations.
5. Clamp material firmly and ensure you are aware of the blade path before you make your cut.
6. Prior to using the saw check the condition of the cord and the abrasive cutting disc.
7. Long stock pieces should be supported safely.
8. Ensure the guard is functioning correctly during operations.
9. When making angle cuts ensure the cutting disc has adequate clearances.
10. Start the saw off the metal and gradually make the cut with even force on the abrasive disc.
11. Pieces of metal that have just been cut will have **SHARP EDGES AND WILL BE HOT** to touch.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Oxy-Acetylene Welding (1)

(Safety Considerations)

1. **PROTECT YOUR HEAD AND EYES** by wearing welding goggles or shield equipped with a minimum shade 5 level of protection. Observers must wear **EYE PROTECTION**.
2. Cylinders must be secured and upright at all times and stored in a well-ventilated area.
3. Full and empty cylinders must be stored separately. Mark all empty cylinders appropriately.
4. Gas cylinders must have **PROTECTIVE CAPS** in place for transporting and storing.
5. Ensure that all regulators, hoses, and torches are in good condition, leak-free, and the hoses are equipped with approved **FLASHBACK ARRESTORS**.
6. Perform leak tests as part of a preventive maintenance procedure.
7. Use only approved pressure-reducing regulators with each gas cylinder.
8. **OXYGEN COMBINES WITH OIL AND GREASE** to cause violent fires. Do not use oxygen to blow dust off clothing.
9. Keep equipment free of oil or grease
10. Make certain a fire extinguisher is readily available.
11. **PROTECT YOUR SKIN** by wearing safety footwear and leather or flame resistant canvas coat and gloves.
12. Do not carry a Butane lighter or other flammables in your pockets
13. Only use a proper striker to ignite torches
14. Check for flammable substances in the vicinty before beginning to weld.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Oxy-Acetylene Welding (2)

(Operating Procedures)

START UP

1. Open oxygen cylinder valve ½ turn to prevent damage to regulator. T hen open all the way.
2. Open acetylene cylinder valve 3/4 turn only.
3. Adjust hose pressures using the T-handles on the regulator gauges.
4. Purge acetylene and the oxygen lines individually before lighting torch.
5. Open the acetylene torch valve 1/3 turn and light the acetylene gas using a striker (before opening the oxygen torch valve).
6. Open the oxygen valve slowly until a neutral flame is achieved.

SHUTDOWN

1. Close the torch acetylene gas valve to extinguish the flame. **(A before O).**
2. Close the torch oxygen valve.
3. Close the acetylene gas cylinder valve.
4. Close the oxygen cylinder valve.
5. Drain the acetylene gas line by opening the torch acetylene gas valve. Release the acetylene gas regulator knob (T-handle) on the gauge.
6. Close the torch acetylene gas valve.
7. Drain the oxygen lines by opening the torch oxygen valve. Release oxygen regulator knob (T-handle) on the gauge.
8. Close the torch oxygen valve. Oxygen and acetylene gauges for both tank and hose pressures should read zero.
9. Neatly wrap hoses on holder, and place torch handle and tip in a position that will prevent damage to them.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Pedestal Grinder

1. **WEAR PERSONAL PROTECTIVE EQUIPMENT INCLUDING AN APPROVED SAFETY SHIELD AND/OR SAFETY GLASSES** when using a grinder, even if the grinder is equipped with protective glass shields. Ensure participants or observers are wearing personal protective equipment.

2. Make certain your work area is clean and clear of debris.

3. Always check the **CLEARANCE OF THE TOOL REST** before starting work. Clearance should never be more than 3mm or 1/8 inch. Always set the tool rest clearance when the wheel is not in motion.

4. Always ensure a new grinding wheel has the **CORRECT RPM RATING** for the grinder it is being installed on.

5. When mounting or replacing any grinding wheel, always ensure that it fits properly on the shaft.

6. When installing the grinding wheel to the spindle, be certain the blotters are affixed to both sides of the wheel and that washers and nuts are of the correct size and are tightened securely.

7. When starting up any grinding wheel, **STAND TO ONE SIDE** out of line with the wheel.

8. Grind only on the face of the wheel. Use the entire face to avoid grooving the wheel.

9. Always **FEED THE WORK TO THE WHEEL GRADUALLY**. Too much pressure or striking the wheel suddenly may cause it to fracture.

10. **STOP THE GRINDER IMMEDIATELY IF IT BEGINS TO CHATTER OR VIBRATE. NEVER USE TOOLS OR HANDS TO STOP ANY GRINDER.**

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Power Tools (1)

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 and certified passports.
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 lubricating and changing tool accessories.
5. Keep guards in place and follow lockout/tag-out procedures.
6. Know the purpose of each tool you use, and use each for the specific task it was designed to do.
7. Always use two hands on the tool when operating. Clamp work piece to a solid surface; do not attempt to hold the workpiece with hand or foot.
8. Unless it's designed for it, never use a portable electric tool where there are flammable vapors or gases present.
9. Electrical cords must be in good condition; report any broken, damaged or bare cords. Keep cords away from heat, oil, and sharp edges
10. All power tools must be effectively grounded and/or be of the double insulated type.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Power Tools (2)

11. If the tool is equipped with a three-prong plug, it should be plugged into a three-hold electrical receptacle. Never remove the third prong.

12. Never use power tools in damp or wet locations or if the worker is perspiring. Moisture helps electricity flows more easily through the body.

13. Rubber gloves and footwear are recommended when working outdoors in damp conditions.

14. Never carry a tool by its cord, or pull the cord to disconnect it from a receptacle. Never carry a plug-in tool with your finger on the switch.

15. Unplug tools before replacing any broken, dull or damaged bits or blades.

16. Be careful not to overreach. Keep your balance and proper footing when working with power tools..

17. 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.

18. Keep floor around work area clean.

19. Be sure the power switch for a portable tool is “off” before plugging it in.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Running Engines

1. **WEAR PERSONAL PROTECTIVE EQUIPMENT INCLUDING SAFETY GLASSES** when running a shop engine. Ensure all participants or observers are wearing personal protection equipment. Make certain your work area is clean and clear of debris. Clean-up oil or water spills to remove the danger of accidental slipping or falls.

2. Perform an inspection of engine peripherals and support systems including hoses, belts, and fluid levels. **DO NOT REMOVE THE RADIATOR CAP IF THE ENGINE IS WARM**.

3. **THE EXHAUST FROM RUNNING ENGINES CONTAINS DEADLY CARBON MONOXIDE GAS**. Always connect an exhaust ventilation system to the exhaust of the engine.

4. Connect the positive battery cable first, and the negative cable last, ensuring terminals are tight and polarities are correct. **DO NOT CREATE SPARKS AROUND THE BATTERY**.

5. Ensure the fuel tank is an approved fuel container and the fuel lines are fastened tight and secured away from moving parts. **GASOLINE HAS A LOW FLASHPOINT AND DOES NOT NEED A SPARK TO IGNITE.** now where the nearest fire extinguisher is available.

6. Connect all meters or test equipment prior to starting the engine. Secure all equipment and leads away from moving parts. **HAVE THE TEACHER CHECK YOUR SET-UP BEFORE PROCEEDING**.

7. Crank the engine using only the starter motor. **KEEP FINGERS AND HANDS AWAY FROM ALL MOVING PARTS, ESPECIALLY THE FAN.** When the engine starts, watch for leaks or loose components and listen for abnormal noises.

8. As the engine warms up be cautious of the exhaust components. **CAUTION NEEDS TO BE EXERCISED AT ALL TIMES AS BURNS CAN OCCUR FROM TOUCHING HOT ENGINE PARTS, OR SCALDING MAY RESULT FROM THE HIGH TEMPERATURE OF THE ENGINE COOLANT**.

9. When the tests and procedures are complete, disconnect the negative terminal of the battery first, and the positive connection last. Remove all test equipment and carefully store away. Remove the fuel tank and feed line and place in an approved fuel storage facility.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Tire Changing Machine

WARNING: COMPRESSED AIR IN USE.

1. **WEAR PERSONAL PROTECTIVE EQUIPMENT INCLUDING SAFETY GLASSES** when using a tire changing machine.
2. Visually inspect the tire and rim for defects.
3. Make certain the work area is free and clear of parts and debris.
4. Deflate air from tire by removing valve core.
5. Follow the proper operational procedure to break the bead of the tire from the rim. **KEEP FINGERS AND HANDS AWAY FROM ALL MOVING PARTS OF THE MECHANISM**. (The manufacturer's documentation outlines the proper procedure)
6. Follow the proper operational procedure to mount tire and rim onto machine and remove tire. **BEWARE OF PINCH POINTS AS TIRE IS ROTATED**. (The manufacturer's documentation outlines the proper procedure)
7. Follow manufacturer's procedures to reinstall tire safely.
8. Safely inflate tire to manufacturer's recommended pressure. **DANGER, DO NOT OVERINFLATE AS TIRE MAY EXPLODE AND CAUSE SERIOUS INJURY.**

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Valve Grinders

1. **WEAR PERSONAL PROTECTIVE EQUIPMENT INCLUDING SAFETY GLASSES** when using a valve grinder. Ensure participants and/or observers are wearing personal protection.
2. Make certain your work area is clean and clear of debris.
3. Follow the valve grinder's operational procedure as provided by the manufacturer of the machine. Some machines use a combination of air and electricity to function.
4. Safely use a valve spring compressor to remove valves from cylinder head.Remove springs in an area away from people or sensitive equipment as the **SPRINGS ARE UNDER CONSIDERABLE COMPRESSED FORCE.**
5. Label, clean, and de-carbonize all valves and components using approved solvents and cleaning agents.
6. Determine automobile or vehicle manufacturer's specifications for valve and seat grinding and accurately set machine to desired angles.
7. With valve grinding machine off, lock valve into holding chuck. **KEEP HANDS AND FINGERS AWAY FROM THE GRINDING STONE AND ROTATIONAL CHUCK AREA WHEN THE MACHINE IS OPERATIONAL.**
8. Stop machine and safely remove valve. Inspect finished condition of valve face.
9. Safely use stem grinder to "true" the end of the stem. Clean and de-carbonize cylinder head using a wire brush on a drill and approved solvents and cleaning agents.
10. Determine the correct size mandrel and seat facing stones for seat grinding. **CHECK CONDITION OF STONES FOR WEAR AND CRACKING.**
11. Use the seat grinding drill to true stones and grind the seats to desired angles. **BE AWARE OF THE HIGH-SPEED ROTATIONAL MOTION OF THIS TOOL.**
12. Always inform the teacher when you are about to begin work.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Vehicle Movement

CAUTION: ANY VEHICLE BROUGHT INTO THE TRANSPORTATION FACILITY FOR REPAIR MUST HAVE A LEGITIMATE WORK ORDER FILLED OUT AND SIGNED BY THE OWNER.

1. Transportation teachers are the only persons authorized to drive vehicles in and out of shops on school property.
2.
3. The radio must be turned off when the vehicle is being moved.
4. Students must be out of the area or zone the vehicle is entering. All students in the shop must be informed when a vehicle is going to be moved.
5. Once in the shop, a vehicle must be turned off and the parking brake applied.
6.
7. When a vehicle is removed from the shop the brakes must be pumped to ensure they are working before the vehicle is moved.
8. Extra caution is needed when backing out of the shops.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Welding Equipment (General)

1. **PROTECT YOUR SKIN** by wearing leather or flame resistant canvas coat and gloves.
2. **PROTECT YOUR HEAD AND EYES** by wearing a welding helmet equipped with approved lens and cover glass. Observers must wear **EYE PROTECTION**.
3. **NEVER START A TORCH OR STRIKE AN ARC** unless you and any observers have protective lenses in place.
4. Always place a suitable barrier around the work area to protect others from arc radiation.
5. **REMOVE COMBUSIBLE MATERIAL** and sweep the area before welding. Any immovable combustibles must be covered with metal or fire resistant guards.
6. Make sure that clothing you are wearing has no cuffs or loose folds exposed.
7. Ensure that **VENTILATION** will remove smoke and fumes.
8. **KEEP OPERABLE FIRE EXTINGUISHERS CLOSE AT HAND** and ready for an emergency. Know where the nearest fire alarm is located
9. When the job is complete, check the area for any hot or smoldering material. Ensure that it is extinguished.
10. **OXYGEN COMBINES WITH OIL AND GREASE** to cause violent fires. Do not use oxygen to blow dust off clothing.
11. Use only approved pressure-reducing regulators with each gas cylinder.
12. Gas cylinders must have **PROTECTIVE CAPS** secured in position for transporting and storing. Oxygen and acetylene tanks must be kept upright at all times.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

Wheel Balancer

1. **WEAR PERSONAL PROTECTIVE EQUIPMENT INCLUDING SAFETY GLASSES** when using a wheel balancing machine.
2. Visually inspect the tire and rim for defects, and make certain the work area is free and clear of parts and debris.
3. Remove old balancing weights from rim. Remove gravel and mud from tire.
4. Select the correct size of centering cone and securely mount the wheel on the balancer. **LARGE TIRES ARE HEAVY. PROPER LIFTING AND HANDLING PROCEDURES ARE TO BE FOLLOWED.**
5. Safely follow the wheel balancer's operational procedure (as listed by the manufacturer of the machine) and accurately calibrate the machine for the wheel being balanced.
6. Ensure the protective hood is down prior to starting the machine, and that **HANDS/FINGERS ARE FREE OF THE ROTATIONAL AREA**.
7. Open the hood only when rotation has completely stopped.
8. Use the special weight pliers to install the recommended weights.
9. Re-spin the tire on the machine to verify the tire is balanced and that it will perform vibration free on the vehicle.
10. Carefully remove the wheel from the machine to avoid personal injury and to prevent damage to the machine.
11. Make certain you control the bounce of the tire on removal.
12. Ensure the teacher is aware that you are about to use this equipment.

AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR

SECTION 3: SAMPLE SAFETY ASSIGNMENTS AND TESTS

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.

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.

Assignment # 1 – Room Inventory and Safety Identification

Use a ruler/straight edge to draw a neat floor plan of this shop and identify the location of the following. Check off each item to ensure you have covered everything:

Entrance/exit doors	
Safety exit	
Fire extinguishers	
Fire alarm	
First aid kit	
Eyewash station	
Power shut-off or emergency “stop” buttons	
Work benches	
Tool storage	
Project storage	
Waste oil storage	
Oily rag storage	
Drill press	
Parts cleaning area	
Pedestal grinder	
Tire machine	
Wheel balancer	
Brake lathe	
Arc welding area	
Oxy-acetylene welding area	
Vehicle hoist(s) safety zones	
Flammable liquid storage	
Exhaust ventilation fan control	
Valve grinder	
Meter and test equipment storage	
Consumable supplies storage	
Cleaning supplies (brooms, dust pans, floor-dry, etc.)	
Safety glasses and face shields	

Safety Assignment # 2 – General Safety

In groups of two, analyze the machine/equipment/issue you have been assigned and provide a detailed description of the safety for that system. Information may be found in a variety of places including textbooks, the Internet, equipment manuals, or from local suppliers. A 5 -10 minute group presentation will be made to the class in which your group will describe the topic and the importance of safety in a transportation environment.

- Group 1 Arc Welder
- Group 2 Oxy-acetylene Welding and Cutting
- Group 3 Valve Grinder
- Group 4 Tire Machine
- Group 5 Wheel Balancer
- Group 6 Vehicle Hoist
- Group 7 Hydraulic Floor Jacks and Safety Stands
- Group 8 Running Engines
- Group 9 Brake Lathe
- Group 10 Chemicals, Solvents, and Fluids

Safety Assignment # 3 – Perform a Safety Audit

Once a month, a group of you will be assigned to perform a safety audit of the transportation shop/lab. To accomplish this task, the group must first design a safety checklist that will be used for the inspection. The checklist must include the headings of:

First aid kit content status

Status of safety equipment

Status of fire protection equipment

Status of cleaning supplies and equipment

Status of storage areas

Status of machines and tools

Status of housekeeping

Your teacher will give you information about safety standards. Prepare a checklist for a safety audit of the shop. When you have approval for your checklist, perform the initial audit and report back to your teacher.

Sample Work Order: Liability Issues

To provide students with experience in documenting service repair work, and to address the liability issues on vehicles brought in for repair.

INSTRUCTIONAL WORK

1. Work accepted must conform to the needs of the students, and have a high degree of instructional value.
2. All work will be performed BY STUDENTS under the supervision of a teacher.
3. Where personal property is involved, the owner agrees to accept full liability for theft, loss of or damage to, from any cause whatsoever, and without limitation. Furthermore, the owner agrees to exonerate the Board of Education, its teachers and students, from any claims arising from work performed, testing, delivery, or from the use or operation thereafter, of the said property.
4. The date or time of completion of instructional service work, will be at the discretion of the teacher and without guarantee.
5. If work accepted is later found for any unforeseen reason (to be unacceptable for instructional purposes), the owner agrees to pay expenses incurred and to remove the property immediately upon request.
6. The owner agrees to supply, without undue delay, the parts or materials required to complete the work requested. If the instructor is involved in the purchase of parts or materials, on behalf of the owner, a deposit may be required in advance of said purchase. Parts or materials cannot be purchased from or through the — — — — Board of Education.

I hereby agree to the above conditions .....
(Signature)

— — — — — — — — BOARD OF EDUCATION

— — — — — — — — — — SCHOOL

☐ Automotive ☐ Service Station ☐ Small Engines

Name ..... Date .....

Address ..... Make ..... Year .....

Model No. ..... Licence ..... Mileage .....

Qty.	Part No.	Parts and Materials	Price
		TOTAL	

Services and/or Repairs Required

Service Points

Check	Replace or Service
☐ Motor Oil	☐
☐ Oil Filter	☐
☐ Radiator Level	☐
☐ Battery Level	☐
☐ Master Cylinder	☐
☐ Air Filter	☐
☐ P.C.V. Valve	☐
☐ Fan Belt	☐
☐ Lubrication	☐
☐ Flexible Brake Lines	☐
☐ Transmission Level	☐
☐ Differential Level	☐
☐ Wiper Blades	☐
☐ Lights	☐
☐ Horn	☐
☐ Tire Pressure	☐
☐ Spare Tire	☐
Tire Condition	
RF LF	
RR LR	

Authorized by: Students Assigned:

Instructor: .....

Technical Head: .....

Students' Observations:

.....

.....

.....

.....

Sample Safety Inspection Checklist (1 of 2 pages)

TRANSPORTATION SAFETY INSPECTION LIST

*Name*_____ *Date*_____

*Address*_____ *Make*_____ *Year*_____

*Model*_____ *Licence*_____ *Mileage*_____

INSPECTION	CHECKED	REPAIR OR SERVICE
LIGHTS		
reverse lights		
tail lights		
parking lights		
head lights		
turn signals		
brake lights		
dash board lights		
hazard lights		
BRAKES		
emergency cables		
brake linings		
rotors and drums		
flex hoses/lines		
wheel cylinder/callipers		
hardware		
STEERING/SUSPENSION		
rack/pinion (FWD)		
tie rod ends (inner/outer)		
steering linkages		
hydraulic lines/hoses		
ball joints		
shock absorption/struts		
springs		
stabiliser links		
FUEL SYSTEM		
fuel tank		
hoses/lines		
fuel pump		
DRIVE LINE		
drive shaft/axle		
constant velocity/universal joints		
transmission fluid leaks		
SEAT BELTS		

Sample Safety Inspection Checklist (2 of 2 pages)

INSPECTION	CHECKED	REPAIR OR SERVICE INFORMATION
WINDSHEILD		
cracks or chips		
wiper washers		
wiper blades		
TIRES		
tred depth		
inflation pressures		
BODY PANELS/FRAME		
holes		
frame rott		
no holes from front door back		
EXHAUST		
holes/corrosion		
leaks (gaskets/joints)		
NOTES		
oil leaks		
fluid levels		

*Checked By*_____ *Date*_____

*Signature*_____

*Comments*_____

_____

Safety Quiz - Batteries

1. The personal protective equipment to wear when handling or working around batteries includes _____.

2. The safety symbols on the top of a battery warn of potential dangers relating to _____, _____, and _____.

3. The electrolyte or "liquid" that is found in an automotive battery is made up of a combination of _____ acid and _____.

4. If electrolyte is splashed in your eyes you must immediately flush them out with _____ for a minimum of 5 minutes and then immediately see a doctor.

5. If electrolyte is spilled on your clothing the acid may be neutralized using _____ _____.

6. The explosive gas that forms around the top of a battery is called _____ gas.

7. When removing a battery from a car, disconnect the _____ cable first.

8. Two methods used to identify the positive battery post or connection on a battery are _____ and _____.

9. Overcharging a battery may cause _____.

10. A 12 volt automotive battery has _____ cells, with each cell producing _____volts per cell.

Safety Quiz – Floor Jacks and Safety Stands

1. The personal protective equipment to wear when using a floor jack includes _____ and _____.

2. The rated lifting capacity of the jack you are using is _____ tonnes.

3. The rated holding capacity of the safety stands you are using is _____ tonnes.

4. Three important preparations to perform on the vehicle before jacking it up include: _____, _____,_____.

5. According to the owner's manual, when using a jack on this vehicle the lifting points are:
(front) _____
(rear)_____.

6. Three potential injuries to persons who incorrectly use a floor jack include: _____,_____,_____.

7. How is a hydraulic jack capable of doing major structural damage to a vehicle if it used incorrectly? _____.

8. Why are safety stands considered to be critical components anytime a hydraulic jack is used? _____.

9. Once the vehicle has been raised and is secure to work on, list 3 safety precautions to follow when working under it.

   - _____.
   - _____.
   - _____.

10. Two reasons for hydraulic equipment to fail include: _____and _____.

Safety Quiz – Hoist Operation

1. The personal protective equipment to wear when using a hoist includes _____ and _____.

2. The rated lifting capacity of the hoist you are using is _____ tonnes.

3. The rated holding capacity of the safety stands you are using under the hoist to hold the vehicle is _____ tonnes.

4. Three important preparations to make on the vehicle before lifting it on the hoist include: _____, _____,_____.

5. According to the owner's manual, when using a hoist to lift this vehicle the lifting points are:
   (front) _____
   (rear)_____.

6. Three potential injuries to persons who incorrectly use a hoist include: _____,_____,_____.

7. How is a hoist capable of doing major structural damage to a vehicle if it used incorrectly?
   _____.

8. Why are safety stands considered to be critical components anytime a hoist is used?
   _____.

9. Once the vehicle has been raised and is secure to work on, list 3 safety precautions to follow when working under it.
   - _____.
   - _____.
   - _____.

10. Three reasons why a hydraulic or electric hoist could fail include: _____,_____,_____.

Safety Quiz – Tire Changing Machine

1. The personal protective equipment to wear when using a tire machine includes _____ and _____.

1. List 3 safety precautions that must be followed when using any pneumatic (air) controlled or operated device.
_____,_____,_____.

2. How can a tire seriously injure someone who is working on it?
_____.

3. When using the tire machine to break the bead of the tire away from the rim, the machine provides a force of _____psi on the bead.

4. List 3 "pinch points" that are capable of inflicting injury if the machine is used incorrectly. These are:
   - _____.
   - _____.
   - _____.

5. Several precautions are necessary to protect the tire and rim from being damaged during removal or installation. Two of these include _____ and _____.

6. Describe how the "drop centre" of a rim is important in tire installation.
_____.

7. The maximum inflation pressure for the tire you are working on is _____psi.

8. The size of the tire you are working on is P- _____.

9. Over-inflation of the tire could result in _____ and _____.

Safety Quiz – Brake Lathe

1. The personal protective equipment to wear when using a brake lathe includes _____ and _____.

2. Why is it essential the brake drum or rotor be carefully measured and examined prior to mounting it on the brake lathe?
   _____.

3. What is the minimum thickness specification for the drum or rotor you are working on?
   _____.

4. Three potential injuries to persons who incorrectly use a brake lathe include:
   _____,_____,_____.

5. The "cutter" on the brake lathe is made of this material.
   _____.

6. The rubber strap that is installed around the perimeter of the drum or rotor helps to prevent _____.

7. What is the maximum size of cut to take on the brake lathe?
   _____.

8. Turning the rotation dial (which governs the depth of cut) .005" on the drum lathe will remove 0._____" of material when the cutter is engaged.

9. Define the term "undersize" as it applies to a drum or rotor.
   _____.

10. What would you do with a drum or rotor that has:
    - Cracks in the surface _____.
    - Black coloured "hot" spots _____.

Safety Quiz – Valve Grinder

1. The personal protective equipment to wear when using a valve grinder includes _____ and _____.

2. List 3 areas of the machine that are capable of inflicting injury if it is used incorrectly. These are:
   - _____.
   - _____.
   - _____

3. What is the specification for the valve face angle you are grinding? _____.

4. What is the specification for the valve seat angle you are grinding? _____.

5. Why are sodium filled valve stems a potential danger?
   _____.

6. If a valve grinding stone is cracked how should you proceed?
   _____.

7. Describe how to tell if a valve stem is “bent”.
   _____.

8. Draw a simple sketch to show how to “undercut” a valve seat using different stone angles.

9. When a valve face is ground and the remaining valve margin is 1/32”, what should you do?
   _____.

10. When using a valve spring compressor to remove or install valves, list 3 safety precautions that are very important.
    - _____.
    - _____.
    - _____.

Safety Quiz – Spring Compressor

1. The personal protective equipment to wear when using a spring compressor includes _____ and _____.

2. List 3 critical features of this device that are capable of inflicting serious injury if it is used incorrectly. These are:
   - _____.
   - _____.
   - _____

3. Why is it important to compress the spring evenly?
   _____.

4. Describe what would happen if the compressor were not securely fastened to a vice or bench.
   _____.

5. If the arms on the compressor were bent out of their original shape, describe how to proceed.
   _____
   _____.

6. If the spring seems too big for the compressor, or does not appear to fit properly, what is the recommended procedure to follow?
   _____.

7. If another student volunteers to assist you with this operation, what safety precautions does this person need to know and follow?
   _____
   _____
   _____
   _____

SECTION 3: SAMPLE SAFETY PASSPORTS

This section contains Safety Passports, which provide a means to track individual student safety knowledge and skills. These Safety Passports insure 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:

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.

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.)

Stationary Equipment				**Hand Tools & Assembly Equipment**			
Equipment	**Rate**	**Sign**	**Date**	**Equipment**	**Rate**	**Sign**	**Date**
Arbor Press				Air Tools			
Arc Welder				Battery Charger			
Beverly Shear				"Booster" Cables			
Brake lathe				Brake Gauge			
Compressed Air				Digital (DVOM) & Analog Meters			
Computers				Electronic Test Equipment			
Drill Press				English & Metric Micrometers			
Metal Chop Saw				English & Metric Vernier			
MIG Welder				Flaring Tool Kit			
Oxy-Acetylene Welder				Fuel Injection Tester			
Pedestal Grinder				Hand Drill			
Running Engines				Hand Grinder			
Tire Machine				Hydraulic Floor Jack & Safety Stands			
Vehicle Hoist				Shop Hand & Power Tools			
Wheel Balancer				Soldering Iron			
				Spring Compressor			

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 initialed 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, remove jewelery, 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 compliment 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).

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:

_____

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 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

Equipment: _____

Attended Teacher Safety Instruction and Demonstration (Notes recorded)		Passed Written or Oral Testing		Demonstrated Safe Set-up 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

Equipment: _____

Attended Teacher Safety Instruction and Demonstration (Notes recorded)		Passed Written or Oral Testing		Demonstrated Safe Set-up 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

Arbor Press

General Conditions

Students must be trained on the safe use of an **Arbor Press** before they may begin using it. The student must demonstrate safe and proficient use before using the Arbor Press.

Personal Protective Equipment

- Full face shield
- Safety glasses
- Coveralls or apron
- Safety footwear

Possible Risk Factor

- Small projectiles
- Slips and falls
- Strain injuries
- Impact injuries [parts breakage]

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate an **Arbor Press** .

Student signature_____

Teacher signature_____

Date of training_____

Arc Welding

General Conditions

Students must be trained on the safe use of the **Arc Welding** equipment before they may begin using it. The student must demonstrate safe and proficient use prior to using Arc Welding equipment.

Personal Protective Equipment

Shade 10 or greater welding helmet
Safety glasses
Leather welding gloves
Coveralls or leather jacket/apron
Safety footwear
Welding screens

Possible Risk Factor

Hot molten metal
Electrical shock
Flash burns [ultra violet rays]
Welding fumes
Small projectiles [chipped slag or debris]

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate **Arc Welders**.

Student signature_____

Teacher signature_____

Date of training_____

Brake Lathe

General Conditions

Students must be trained on the safe use of a **Brake Lathe** before they may begin using it. The student must demonstrate safe and proficient use prior to using the Brake Lathe.

Personal Protective Equipment

- Safety Glasses
- Safety footwear

Possible Risk Factor

- Eye injuries
- Cuts and abrasions
- Burns
- Entanglement
- Pinching and crushing of fingers

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate a **Brake Lathe**.

Student signature_____

Teacher signature_____

Date of training_____

Battery Handling, Boosting, and Charging Methods

General Conditions

Students must be trained on the safe methods of **Battery Handling, Boosting, and Charging Methods** before they may work on them. The student must demonstrate safe and proficient use prior to handling, boosting or charging a battery.

Personal Protective Equipment

- Safety Glasses
- Safety Footwear
- Work Gloves [Acid resistant]
- Coveralls

Possible Risk Factor

- Explosion
- Eye injuries
- Corrosive burns
- Electric Shock
- Arcing
- Fumes and Vapours
- Lower Back Strain

Student has been trained and understands the possible risk factors and the required personal protective equipment and methods of **Battery Handling, Boosting, and Charging Methods**.

Student signature_____

Teacher signature_____

Date of training_____

Beverly Shear

General Conditions

Students must be trained on the safe use of a **Beverly Shear** before they may begin using it. The student must demonstrate safe and proficient use prior to using the Beverly Shear.

Personal Protective Equipment

- Safety Glasses
- Coveralls or apron
- Safety footwear
- Work gloves

Possible Risk Factor

- Small projectiles
- Slips and falls
- Strain injuries
- Cuts and abrasions

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate a **Beverly Shear.**

Student signature_____

Teacher signature_____

Date of training_____

Compressed Air

General Conditions

Students must be trained on the safe use of **Compressed Air** before they may begin using it. All connections must be secure and hoses must be in good condition before usage of compressed air systems. The student must demonstrate safe and proficient use prior to using compressed air.
Never direct Compressed Air towards yourself or others.

Personal Protective Equipment

- Safety glasses
- Safety footwear [work boots]
- Work gloves
- Hearing protection

Possible Risk Factor

- Eye injuries
- Hearing loss
- Loss of life
- Impact (hoses disconnecting from tools or each other)
- Air entering bloodstream

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate **Compressed Air**.

Student signature_____

Teacher signature_____

Date of training_____

Drill Press

General Conditions

Students must be trained on the safe use of the **Drill Press** before they may begin using it. The student must demonstrate safe and proficient use prior to using the Drill Press.

Personal Protective Equipment

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

Possible Risk Factor

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

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate a **Drill Press**.

Student signature_____

Teacher signature_____

Date of training_____

Electronic Test Equipment and Scan Tools

General Conditions

Students must be trained on the safe use of **Electronic Test Equipment and Scan Tools** before they may begin using them. The student must demonstrate safe and proficient use prior to using Electronic Test Equipment and Scan Tools.

Personal Protective Equipment

- Safety glasses
- Grounding straps
- Insulated hand tools

Possible Risk Factor

- Eye injuries
- Electrical burns
- Electrical shock
- Entanglement

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate **Electronic Test Equipment and Scan Tools**.

Student signature_____

Teacher signature_____

Date of training_____

Fuel Injection Tester

General Conditions

Students must be trained on the safe use of a **Fuel Injection Tester** before they may begin using them. The student must demonstrate safe and proficient use prior to using the Fuel Injector Tester.

Personal Protective Equipment

- Safety glasses
- Coveralls
- Safety footwear

Possible Risk Factor

- Eye injuries
- Hand Injuries
- Cuts and abrasions
- Fire
- Explosion
- Chemical spill (gasoline)

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate **Fuel Injection Tester**.

Student signature_____

Teacher signature_____

Date of training_____

Flaring Tools

General Conditions

Students must be trained on the safe use of **Flaring Tools (English and Metric)** before they may begin using them. The student must demonstrate safe and proficient use prior to using flaring tools.

Personal Protective Equipment

- Safety glasses
- Coveralls
- Safety footwear

Possible Risk Factor

- Eye injuries
- Hand Injuries
- Cuts and abrasions
- Chemical spill (Brake fluid)

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate **Flaring Tools (English and Metric)**

Student signature_____

Teacher signature_____

Date of training_____

Hand Drill (Air or Electric)

General Conditions

Students must be trained on the safe use of a **Hand Drill (Air or Electric)** before they may begin using them. The student must demonstrate safe and proficient use prior to using hand drills.

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

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate a **Hand Drill (Air or Electric)**.

Student signature_____

Teacher signature_____

Date of training_____

Hand Grinders

General Conditions

Students must be trained on the safe use of various types of **4", 5", 7" Hand Grinders** before they may begin using them. Proper guards must be in place before this equipment is used. The student must demonstrate safe and proficient use prior to using a hand grinder.

Personal Protective Equipment

- Full face shield
- Safety glasses
- Industrial work gloves
- Coveralls or apron
- Safety footwear
- Hearing protection

Possible Risk Factor

- Small projectiles [Metal cuttings or debris]
- Entanglement
- Hearing loss [prolonged use without PPE]
- Burns
- Cuts and abrasions

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate **4", 5", 7" Hand Grinders**.

Student signature_____

Teacher signature_____

Date of training_____

Hydraulic Floor Jack and Safety Stands

General Conditions

Students must be trained on the safe use of various types of **Hydraulic Floor Jacks and Safety Stands** before they may begin using them. The student must demonstrate safe and proficient use prior to using hydraulic floor jacks and safety stands..

Personal Protective Equipment

- Safety Glasses
- Coveralls
- Safety footwear

Possible Risk Factor

- Pinching or crushing
- Loss of life
- Hand injuries
- Cuts and abrasions
- Muscle strain
- Back injury

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate **Hydraulic Floor Jacks and Safety Stands.**

Student signature_____

Teacher signature_____

Date of training_____

Measurement Equipment

General Conditions

Students must be trained on the safe use of **English and Metric Measurement Equipment** before they may begin using them. The student must demonstrate safe and proficient use prior to using measurement equipment.

Personal Protective Equipment

- Safety glasses
- Safety footwear

Possible Risk Factor

- Eye injuries
- Hand Injuries
- Cuts and abrasions

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate **English and Metric Measurement Equipment**

Student signature_____

Teacher signature_____

Date of training_____

Metal Cut Off (Chop) Saw

General Conditions

Students must be trained on the safe use of the **Metal Cut Off (Chop) Saw** before they may begin using it. The student must demonstrate safe and proficient use prior to using the metal cut off saw.

Personal Protective Equipment

- Face shield
- Safety glasses
- Coveralls
- Safety footwear
- Gloves

Possible Risk Factor

- Eye injuries
- Hand injuries
- Cuts and abrasions
- Small projectiles
- Fire

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate a **Metal Cut Off (Chop) Saw**.

Student signature_____

Teacher signature_____

Date of training_____

Meters and Test Equipment

General Conditions

Students must be trained on the safe use of **Meters and Test Equipment** before they may begin using them. The student must demonstrate safe and proficient use prior to using meters and test equipment.

Personal Protective Equipment

- Safety glasses
- Grounding straps
- Insulated hand tools

Possible Risk Factor

- Eye injuries
- Electrical burns
- Electrical shock
- Entanglement

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate **Meters and Test Equipment**.

Student signature_____

Teacher signature_____

Date of training_____

MIG Welding Machine

General Conditions

Students must be trained on the safe use of a **MIG Welding Machine** before they may begin using it. The student must demonstrate safe and proficient use prior to using a MIG welding machine.

Personal Protective Equipment

- Shade 10 or greater welding shield
- Safety Glasses
- Coveralls or leather apron
- Safety footwear
- Leather welding gloves

Possible Risk Factor

- U/V rays I/R rays
- Burns to hands
- Gas bottle upset
- Electric Shock
- Fumes

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate a **MIG Welding Machine**.

Student signature_____

Teachers signature_____

Date of training_____

Oxy-Acetylene Welding and Cutting

General Conditions

Students must be trained on the safe use of **Oxy-Acetylene Welding and Cutting** equipment before they may begin using it. The student must demonstrate safe and proficient use prior to using oxy-acetylene welding and cutting equipment.

Personal Protective Equipment

- Shade 5 cutting goggles or glasses
- Safety glasses
- Leather welding gloves
- Coveralls or leather jacket/apron
- Safety footwear

Possible Risk Factors

- Hot molten metal
- Eye burns [splatter]
- Welding fumes
- Small projectiles [chipped slag or debris]
- Hand injuries
- Cuts and Abrasions
- Explosion

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate **Oxy-Acetylene Welding and Cutting Equipment**.

Student signature _____

Teacher signature _____

Date of training _____

Pedestal Grinder

General Conditions

Students must be trained on the safe use of a **Pedestal Grinder** before they may begin using it. The student must demonstrate safe and proficient use prior to using the pedestal grinder.

Personal Protective Equipment

- Face shield
- Safety glasses
- Leather welding gloves
- Coveralls or leather jacket/apron
- Safety footwear

Possible Risk Factors

- Hot metal
- Eye injury
- Small projectiles
- Hand injuries
- Cuts and Abrasions
- Entanglement

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate a **Pedestal Grinder**.

Student signature _____

Teacher signature _____

Date of training _____

Running Engines

General Conditions

Students must be trained on the safe use involved in **Running Engines** before they may begin working on them. The student must demonstrate safe and proficient use prior to working on a running engine.

Personal Protective Equipment

- Safety glasses
- Coveralls
- Safety footwear
- Breathing protection (Shop exhaust system)

Possible Risk Factors

- Asphyxiation
- Burns
- Eye injury
- Projectiles
- Hand injuries
- Cuts and abrasions
- Entanglement

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate **Running Engines**.

Student signature _____

Teacher signature _____

Date of training _____

Shop Hand and Power Tools

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 safe and proficient use prior to using hand and power tools.

Personal Protective Equipment

- Safety glasses
- Coveralls
- Safety footwear

Possible Risk Factors

- Eye injury
- Projectiles
- Hand injuries
- Cuts and abrasions
- Entanglement
- Electrocution

Student has been trained and understands the possible risk factors and the required personal protective equipment to use **Shop Hand and Power Tools**.

Student signature _____

Teacher signature _____

Date of training _____

Soldering Iron

General Conditions

Students must be trained on the safe use of a **Soldering Iron** before they may begin using it. The student must demonstrate safe and proficient use prior to using a soldering iron.

Personal Protective Equipment

- Safety glasses
- Coveralls
- Safety footwear

Possible Risk Factor

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

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate a **Soldering Iron**.

Student signature_____

Teacher signature_____

Date of training_____

Spring Compressor

General Conditions

Students must be trained on the safe procedures for using a **Spring Compressor** before they may attempt this task. The student must demonstrate safe and proficient use prior to using the spring compressor.

Personal Protective Equipment

- Safety Glasses
- Coveralls
- Safety footwear [work boots]

Possible Risk Factor

- Eye injuries
- Hand and finger injury
- Projectiles
- Cuts and abrasions
- Pinching

Student has been trained and understands the possible risk factors and the required personal protective equipment to use a **Spring Compressor**.

Student signature_____

Teacher signature_____

Date of training_____

Tire Machine

General Conditions

Students must be trained on the safe use of the **Tire Machine** before they may begin using it. All connections must be secure and hoses must be in good condition. The student must demonstrate safe and proficient use prior to using the tire machine.

Personal Protective Equipment

- Safety Glasses
- Safety footwear [work boots]
- Work Gloves
- Hearing protection
- Coveralls

Possible Risk Factor

- Eye injuries
- Pinch points
- Impact (hoses disconnecting from tools or each other)
- Entanglement of clothing
- Strain injuries

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate the **Tire Machine**.

Student signature_____

Teacher signature_____

Date of training_____

Pneumatic Tools (Drill, Grinder, Chisel, Impact Gun)

General Conditions

Students must be trained on the safe use of **Pneumatic Tools** before they may begin using them. The student must demonstrate safe and proficient use prior to using pneumatic tools.

Personal Protective Equipment

- Safety glasses
- Coveralls or apron
- Safety footwear

Possible Risk Factor

- Eye injuries
- Projectiles
- Impact injuries [parts breakage]
- Sharp metals/objects
- Cuts and abrasions
- Compressed air
- Air embolism in bloodstream

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate **Pneumatic Tools**.

Student signature_____

Teacher signature_____

Date of training_____

Vehicle Hoists

General Conditions

Students must be trained on the safe use of **Vehicle Hoists** before they may begin using them. The student must demonstrate safe and proficient use prior to using a vehicle hoist.

Personal Protective Equipment

- Safety Glasses
- Safety footwear [work boots]
- Work Gloves

Possible Risk Factor

- Eye injuries
- Back Strain
- Crushing [being pinned]
- Loss of life
- Head injuries
- Slipping
- Burns [hot engine parts]
- Hand Injuries

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate **Vehicle Hoists**.

Student signature_____

Teacher signature_____

Date of training_____

Wheel Balancer

General Conditions

Students must be trained on the safe use of the **Wheel Balancer** before they may begin using it. The student must demonstrate safe and proficient use prior to using the vehicle hoist.

Personal Protective Equipment

- Safety Glasses
- Safety footwear [work boots]
- Work Gloves

Possible Risk Factor

- Eye injuries
- Back Strain
- Slipping
- Slipping
- Hand Injuries
- Projectiles

Student has been trained and understands the possible risk factors and the required personal protective equipment to operate **Wheel Balancer**.

Student signature_____

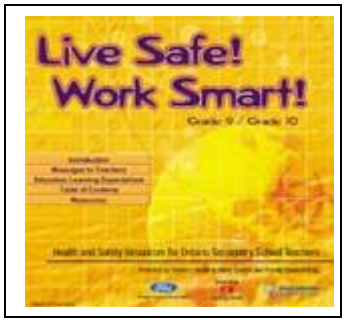
Teacher signature_____

Date of training_____

Appendix A: *Health and Safety Resources*
to Support Health and Safety Expectations in the Ontario Secondary School Curriculum

This resource list has been assembled by the *Live Safe! Work Smart!* project team to further support the lessons, overheads, exercises and examples in *Live Safe! Work Smart!* We've previewed most of the resources to ensure they are suitable for the age and experience level of your students, that they bring the workplace into your classroom and especially that they support the health and safety expectations in the Ontario secondary curriculum
Further resources can be found in Section 3 of each chapter of *Live Safe! Work Smart!* and in the Resources section at the back of each binder.

Live Safe! Work Smart! Grade 9/10 and Grade 11/12



Web address: http://www.livesafeworksmart.net
Written by health and safety professionals, produced by the Ministry of Labour in partnership with the Ministries of Education and Training, Colleges and Universities, *Live Safe! Work Smart!* provides the only comprehensive resource for Ontario teachers developed to match health and safety curriculum expectations from Grades 9 – 12. It has received top marks from the Ontario Curriculum Center. Reviews can be viewed on the OCC website: (*www.curriculum/occ/resources.org*). Within the two-volume set are lessons, overheads, handouts and exercises well suited to cooperative education and apprenticeship.

Binders and CDs have been distributed to all secondary schools in Ontario. If you can't locate either, check the website at *www.livesafeworksmart.net* for who to contact in your Board to get more information on your local resources, or to order a CD of your own. If you don't have access to the web, you can place an order by calling 1-800-268-8013.

Ontario Ministry of Labour
Web address: *http://www.gov.on.ca/lab*
For news and information about Ontario's health and safety and employment legislation, the Ministry of Labour'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: *www.WorkSmartOntario.gov.on.ca (available early 2003)*

This section of the Ministry of Labour 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.

Workplace Safety and Insurance Board
Web Address: http://www.wsib.on.ca
Summary: Contains information for both employers and employees about workplace safety. Includes advice on prevention, important news releases, policies and other work-related information.

Video: ***Launching a Safe Start*** **.. You have rights and responsibilities** (2001) cc
Produced by: Workplace Safety & Insurance Board (WSIB)
Cost: Free
Description: If you work in Ontario "You have rights and responsibilities" legislated under the *Occupational Health and Safety Act.* Workplace health and safety affects not only you and those around you, but your family and community as well. Keeping safe and healthy while at work in the best interests of everyone. One way to ensure that, is to work with your employer and participate in making your workplace safe.
This video is part of an orientation resource package designed to help make Ontario's workplace health and safe.
There are two booklets to accompany the video:
Launching a Safe Start – an Employer's Guide (5009A)
Launching a Safe Start – A Worker's Guide (5010A)

Ontario School Boards Insurance Exchange

Web Address: http://www.osbie.on.ca
Summary: 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.

Although this reference material is not intended to replace school board policies and procedures, it is intended to supplement the risk management considerations, which should go into making the decisions on the most common day-to-day school activities. The design of this publication is to promote the display of this document in a calendar-

like format in every classroom to facilitate ready “Risk Management at a Glance”. Every employee who may be called upon to make a decision about the permitting of or the organizing of any activity listed can use this.

For any activities not listed in this material, it is recommended that you contact your board office, or refer to the policies and procedures as stated by your school board.

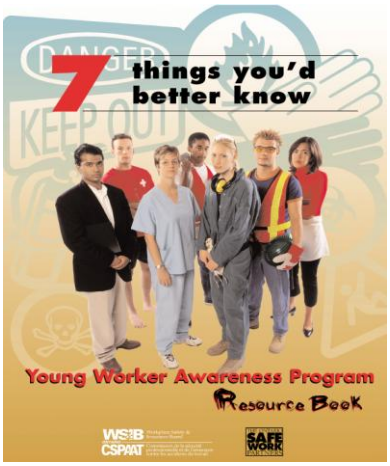
Young Worker Awareness program

Web Address: http://www.yworker.com
Summary: The Young Worker Awareness Program is designed to give students the information they need to protect their health and safety on the job. This complete website provides a lot of information for students – makes a great research site!

Student Resource Book

The student resource book, a 32-page, full colour publication called “*7 things you’d better know”* (pictured below) is available free of charge. The book is distributed during a young worker awareness program or can be obtained by contacting the WSIB at *Youth@wsib.on.ca* or call : 1-800-663-6639.

Student Resource Book



Young Worker Awareness Program

School presentations

For several years, Ontario schools have been welcoming persons from the community to deliver the Young Worker Awareness Program (YWAP). YWAP provides an excellent overview of the rights and responsibilities of workers and also provides useful information for students on work placements. Those who deliver the program are committed to preventing injuries among young workers. Bringing in a community representative to reinforce the lessons you’ve been teaching for cooperative education safety is a great idea!

Contact Toll-free:
IAPA – 1-800-406-IAPA (4272)
Workers’ Centre – 1-888-869-7950
WSIB – 1-800-663-6639

Video: **Outreach Edition: Things You'd Better Know…To Work Smart, Work Safe *(2001)***
Length: 13 min.
Cost: FREE
Produced by: Workplace Safety & Insurance Board (WSIB)
Description: Created as part of the Young Worker Awareness Program, this video is narrated by Marisa Ellis, whose brother was killed after getting caught in an industrial mixer on the second day on the job at a bakery. It details the rights and responsibilities of young workers, and features the stories of:
-Marco, who lost his right hand trying to remove a piece of metal from a press
-Sandy, whose left hand was cut off by a fan
-Matt, who was paralyzed while employed as a camp counselor
-Isobel, who suffered from head and neck injuries after slipping and falling on the job
-Sean Kells, who died after a chemical explosion.
The program also has a companion student booklet (pictured on page 30) that provides students with a free, lasting reference to help them work safely.

www.oshforeveryone.ca is a health and safety website that provides a search engine and access to many organizations in Ontario who provide safety information. It's a great spot to research particular hazards or issues and get one-stop shopping in Ontario's health and safety system.

Video: Dying to Work

W-Five, CTV production 2001
20 minutes
Cost: varies by quantity
W-Five examines the perils of teen labour and discovers an astounding statistic — on average one young worker in Canada dies on the job each week and sixty thousand young workers are injured each year. *"The tragedy is that parents willingly send their children to work — not knowing that safety rules are la*x," says reporter Wei Chen, who investigates several tragedies across Canada. The most high-profile case is that of 18-year-old David Ellis, killed on his second day on the job at a Toronto-area bakery. He died while taking cookie dough from a mixer that suddenly turned on. The program follows Ellis' father as he campaigns for tougher safety rules and tries to make teenagers aware of the risks they can face. Parents and victims from Delta, B.C. and Edmonton, Alberta, recount the tragedies in their lives. Experts say these accidents were preventable. Why did it happen?

Produced by CTV Television Network
© 2001 • 20 min. • Gr. 9-Adult, Professional
VHS Price: PPR-$99 • Code # 859-31-1168VHS
MVCD Price: PPR-$109 • Code # 859-92-1168MVCD

Bulk Order Prices
· 10 or more copies: VHS Price: PPR-$50 each
· 25 or more copies: VHS Price: PPR-$35 each

Ask for the 2001 edition of this production:
Toll free: 1-800-263-1717
Email: video@magiclantern.ca
Internet site: www.magiclantern.ca

Canadian Centre for Occupational Health and Safety (CCOSH)

Web address: http://www.ccohs.ca
Another website has excellent general information and a special section called Young Workers' Zone. The Young Worker's Zone provides health and safety information on various types of workplaces – great for TAP and Career Studies exercises.

CanOSH – Canada's National Occupational Safety and Health Website – Young Workers

Web Address: http://www.canoshweb.org/en/young_workers.html
Summary: A list of links to a series of occupational safety and health (OSH) resources for young workers and/or individuals who are new to the workforce.

North American Occupational Safety and Health (NAOSH) Young Worker Links

Web Address: http://www.naosh.org/english/young_worker_links.html
Summary: Includes links to occupational safety and health related websites, as well as other youth resources.

Ontario School Boards Insurance Exchange

Web Address: http://www.osbie.on.ca
Summary: 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.

Although this reference material is not intended to replace school board policies and procedures, it is intended to supplement the risk management considerations, which should go into making the decisions on the most common day-to-day school activities. The design of this publication is to promote the display of this document in a calendar-like format in every classroom to facilitate ready "Risk Management at a Glance". Every

employee who may be called upon to make a decision about the permitting of or the organizing of any activity listed can use this.

For any activities not listed in this material, it is recommended that you contact your board office, or refer to the policies and procedures as stated by your school board.

The First Step…Student Safety Handbook

(2000) (Also available in French.)
Produced by: London Occupational Safety and Health Information Services
Contact Info: 424 Wellington Street, Suite 218, London, ON, N6A 3P3
Tel: (519) 433-4156 **Fax:** (519) 433-2887 **E-mail:** losh@execulink.com
Web: *www.losh.on.ca*
Description: A handbook for students, first-time workers, employers, unions, teachers, parents and health and safety professionals. This book may be used with other health and safety training programs, for example: WHMIS, the school curriculum, or the Young Worker Awareness Program.
Cost: 1 copy - $20 plus $5 for postage and handling.
100+ copies - $15 each plus postage and handling.

Take Our Kids to Work – Teacher's Guide; Workplace Guide

The Learning Partnership
Web Address: http://www.tlp.on.ca
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.

Hospitality and Tourism

Video: **Foodservice Safety – Video Orientation Kit**
Length: 23:30 min. in the four subject areas.
Cost: $44.95 plus $5 postage and handling.
Produced by: Ontario Service Safety Alliance
Contact Info: 4950 Yonge Street, Suite 1500, Toronto, ON, M2N 6K1
Toll Free: 1-888-478-6772 **Fax:** (416) 250-9500 **E-mail:** *info@ossa.com*
Web: *www.ossa.com*
Description: This four-module video and employee guide exposes the most common hazards and dangers in restaurant and foodservice workplaces. Subjects include: Burns and Scalds, Slips and Falls, Cuts and Lacerations, and Repetitive Strain Injuries.

Ontario Service Safety Alliance

Web address: http: www.ossa.com

The Ontario Service Safety Alliance provides health and safety resources to a wide spectrum of workplaces. Individual resources have not been reviewed.

Construction Technology

Construction Health and Safety Association of Ontario

Web Address: www.csao.org

This association has extensive resources customized to all aspects of the construction industry. The resources mentioned below have been selected because their appropriate for workers new to construction, but check out the website for additional sector or equipment-specific resources to suit the needs of students being placed in the industry.

Construction Health & Safety Manual (1998)
Produced by: Construction Safety Association of Ontario
Contact Info: 21 Voyager Court South, Etobicoke, ON, M9W 5M7
Tel: (416) 674-2726 **Toll Free:** 1-800-781-2726 **Fax:** (416) 674-8866
E-mail: *info@constructsafety.on.ca,* **Web:** *www.csao.org*
Description: The manual covers topics of interest in all trades. The subjects include responsibilities for workplace health and safety; personal protective equipment; first aid and emergency procedures; back care; housekeeping; and access equipment such as ladders, scaffolds, and elevating work platforms. Other topics include hand and power tools for construction trades and step-by-step guidelines for welding, cutting and formwork.
Cost: $22.95 plus GST & PST, postage and handling.

SPECIAL OFFER FOR ONTARIO TEACHERS: TEACHER RESOURCE KIT

The Construction Safety Association of Ontario has pulled together a resource kit, which includes some of their best publications that explain the construction industry (manual), and are geared to new construction workers (pamphlets, video).
The special price for teachers is: **$50.00**. It includes the components below, which can be ordered individually, plus 30 “Your New Construction Job” booklets and classroom posters.

Package: **Construction Health & Safety Teachers' Kit**
Produced by: Construction Safety Association of Ontario
Contact Info: **Tel:** (416) 674-2726 **Toll Free:** 1-800-781-2726 **Fax:** (416) 674-8866
Package Includes: 1 copy of Construction Health & Safety Manual; 30 brochures "Your Construction Job"; 1 "New on the Job" video; 4 different posters "Danger Due To…"; 4 different posters including "Personal Protective Equipment"; "Joint Health & Safety Committee"; and "Help New Workers Start Right"
Cost: $50.00 plus GST & PST, postage and handling.

5 CD-ROM SET:
Titles: **Legislation, Personal Protective Equipment, Site Safety, Material Handling and Back Care, and WHIMS Review (Special Package)**
Produced by: Construction Safety Association of Ontario
Description: This program will be of use and benefit to all construction personnel. Upon completion of this program, participants will be able to recognize and identify the basic requirements for health and safety on construction sites, including both equipment and procedures. Program duration is a minimum of 16 hours. Generic Level 1 training is a component of most multi-level trade training programs. Modules include: Legislation, Personal conduct, Personal protective equipment, Access structures, Electrical hazards, and Back care and materials handling.
Cost: $50.00 plus GST & PST, postage and handling.

VIDEO: **New on the Job** (1997) *Length:* 10 min.
Produced by: Construction Safety Association of Ontario
Description: The video follows a new worker from his arrival on site through the various stages of his orientation to the moment when he's ready to start work. Live-action shots highlight personal protective equipment, safety responsibilities, and hazard awareness. The video also alerts workers to the four major causes of death on construction projects.
Cost: $29.95 plus GST & PST, includes postage and handling.

Manufacturing Technology

Industrial Accident Prevention Association
Web address: www.iapa.on.ca
Cost: $10 for each video including postage and handling.
The Industrial Accident Prevention Association (IAPA) has a well-developed resource library with topics related to the wide variety of safety issues found in manufacturing and industrial workplaces. Training courses, booklets, videos, web learning are among the

types of materials currently available.

Blowin' in the Wind: Machine Guarding Prevents Deaths *Length:* 12 min.
Contact Info: **Canadian Auto Workers Union: Health and Safety Department**:
(416) 495-6558 **Toll Free**: 1-800-268-5763
E-mail: *caw@caw.ca* **Web:** *www.caw.ca*
Description: Deficiencies and the minimal use of machine guarding and lockout have resulted in workplace injuries and fatalities. The video describes the importance of machine guarding in protecting the health and safety of workers.

Transportation Technology

Transportation Health and Safety Association of Ontario, the Ontario Trucking Association and the Ontario Safety League have tremendous expertise about the industry itself and health and safety elements that everyone working in the industry needs to know.

Transportation Health and Safety Association of Ontario
Web address: http://www.thsao.on.ca

Ontario Trucking Association
This association's free video(s), including "Career Highways – Safety" have been used and recommended by cooperative education teachers.
Web address: http://www.ontruck.org

Ontario Safety League
Web address: http://www.osl.org

Health and Personal Services

Health Care Health & Safety Association of Ontario
Web Address: http://www.hchsa.on.ca
Summary: HCHSA supports the prevention and reduction of workplace injuries and occupational diseases in the health care sector in Ontario by assisting health care sector organizations to adopt preventative best practices and approaches. Information on the site includes: a variety of publications in print and electronic form; newsletters;

legislative information; research updates; guidelines; reporting forms and program manuals; selected occupational health and safety training and certification; and relevant professional health and safety information.

Communications and Computer Technology

For computer courses, resources relating to Ergonomics are listed on pages 53 – 55 of *Live Safe! Work Smart!* Grade 11/12 edition.

NOTABLE RESOURCES

School Workers Health and Safety Guide

Canadian Centre for Occupational Health and Safety

This information-packed coil-bound pocket book covers school safety topics such as emergency preparedness, classroom safety, arts and crafts, industrial technology, maintenance and custodial practices, sanitation and infection control, sports and activities, work environment, ergonomics, personal protective equipment and health and safety legislation. There are good ideas and work practices that can add to your existing safety programs.

Cost: The price is reasonable and covers printing and distribution costs.
Check current cost and delivery information in the publications section of the web site.

Web address: http://www.ccohs.ca