

General Orientation to Safety in Mechanical Engineering

Presented by:

Dr. Cagri Ayranci

Assistant Professor & Chair of Safety Committee

Seminar Outline

- Policies
 - Province, U of A, and Department
- Procedures
 - Contacts and Resources
 - Training
 - Working Alone & Hazard Assessment
 - Personal Protective Equipment (PPE),
Transport of Dangerous Goods (TDG)
 - Laboratory Conduct

Safety Policy

Provincial Legislation

- Occupational Health and Safety (OH&S) Act, Code and Regulation – Government of AB
- Website: Employment Alberta
 - <http://work.alberta.ca/searchaarc/>
 - OH&S Act Outlines **responsibilities**:
 - Worker
 - Employer

Provincial Legislation

- Highlights from OH&S Act:
 - Basic Responsibilities
 - Employer
 - Insure Health and Safety of Workers
 - Workers Aware of Responsibilities and Duties (Act, Code, and Regulation)
 - Worker
 - Insure Health and Safety of Self and Co-workers
 - Co-operate with Employer to Protect Health and Safety

- Specifics (OH&S Act)
 - Refusal of Unsafe Work (Imminent Danger)
 - Responsibility of Workers
 - Duty to Report to Employer
 - Orientation and Training
 - Orientation to Work Site (Supervisor)
 - Training (WHMIS, PPE)
 - Emergencies (Reaction and Reporting)

Provincial Legislation

- Reporting
 - ALWAYS Report Incidents
 - Worker Compensation Board (**WCB**)
 - Incidents Reported **WITHIN 72 HOURS**
 - An 'incident' is defined as an injury that required professional medical attention.



University Policy

- University policy set by Environmental Health and Safety
 - See website: www.ehs.ualberta.ca
- Guided by Provincial Regulations, Acts, and Codes

Department Policy



- Safety Concerns Addressed by Department Council Through Safety Committee Members (which has 2 grad students)
- All Graduate Students Attend Introductory Safety Seminar

Safety Procedures

Contacts

- People: Best Safety Resource
- Know Your Lab Mates
- Know Your Department Safety Representatives

Contacts

- Department of Mechanical Engineering Safety Committee

Cagri Ayranci 492-2791 (Committee Chair)

Tuula Hilvo 492-3639 (Shop Rep)

Roger Marchand 492-3639 (Shop Rep)

Brian Fleck 492-1214 (Department Chair)

Kajsa Duke 492-4710

Albert Vette 492-1534

+ 2 graduate students

Safety Committee

- Please Contact Committee for:
 - Information
 - Reporting an Incident (Shop or me)
 - Ordering Safety Equipment (Tuula Hilvo or Shop Staff)



Tuula Hilvo

Safety Resources

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Safety

Research

- Biomedical engineering researchers observe bacteria behaving badly**
- Bringing advanced information technology to the oil and gas industry**
- Engineering researcher is looking for the cleanest ways to produce and transport bitumen**
- Researcher investigating cleaner oil sands upgrading techniques**

[»more](#)

Events

- Mechanical Engineering New Graduate Student Orientation**
JANUARY 08 2016
- MSc Graduate Seminar: Abdul Wasay, Geckofluidics: A strong and reliable reversible bonding technique for microfluidics**
JANUARY 08 2016
- MSc Graduate Seminar: Azadeh Seif, Assessment of Reliability and Energy Intensity Development for Oil Sands Mining Equipment of Surface Mining in Alberta**
JANUARY 11 2016
- Design Stream 2016**
APRIL 27 2016


[»more](#)


News

- U of A Eco Car Team Retires A Legend**
- MecE Lab is Developing a Method and Certification System for Safer Helmets**
- MecE260 Fall 2015**
- Study Automotive Engineering in Japan this Summer**

[»more](#)


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Department of Mechanical Engineering 

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safety

Everyone working in a lab needs the following training:

1. WHMIS Training
 - WHMIS training is offered by the University and consists of an [online quiz](#).
2. Department General Safety Orientation
 - The Department of Mechanical Engineering offers a general orientation to safety. This seminar is required for all students who have access (i.e., keys) to the Mechanical Engineering Building or NINT building. Seminars are offered in September. Please contact [Caqri Avranç](#) if you missed this seminar.
3. Lab-Specific Safety Orientation
 - Lab-specific safety training/orientation is offered by the principal investigator (PI) of the research project or his/her designate. This orientation should cover general safety information, locations of safety equipment, and safe operating procedures for the lab. Once this orientation is complete, the PI (or designate) along with the student should sign-off on a form to document this training.

Contact Information

[Caqri Avranç](#)
Phone: (780) 492-2791

[Roger Marchand](#)
Shop Supervisor
Phone: (780) 492-3639

[Tuula Hilvo](#)
Shop Safety Contact
Phone: (780) 492-2346

Note: Individual laboratories are to call UofA [EHS](#) to arrange chemical pickup. See link below for the Chemical Disposal Form and call: Tony Selinger
Phone: (780) 492-0144

Related Links

- [General Safety Orientation Quiz](#)
- [Mechanical Engineering Safety Policy](#)
- [EHS Chemical Disposal Form](#)
- [Basic Lab Safety Elements \(All Labs\)](#)
- [Chemical Inventory Template \(2007\)](#)
- [Hazard Assessment Form \(2007\)](#)
- [Hazard Assessment Instructions](#)
- [U of A Environmental Health & Safety \(EHS\)](#)

Emergencies

- For ALL Emergencies (on Campus) Call:

911

(9-911 will work as well)



Emergency Procedures

- Mechanical Engineering Procedure
 - Medical: Life Threatening (911); Serious but Mobile (Health Centre or Hospital); Minor (1st Aid Kit)
 - Fire: Activate Alarm While Exiting; Close Doors; Evacuate Building; Call 911; Meet Fire Department at Main Entrance

Emergency Procedures

- Mechanical Engineering Procedure
 - Chemical Spill:
 - MINOR – Attend to Person; Get Help; If Possible, Use Spill Mix; Contact Tuula (492-3639) for Proper Disposal
 - MAJOR – Call 911

Emergency Procedures

- NINT Procedure
 - SAME as Mechanical Engineering
 - Call 911



Incident Reporting

- Mechanical Engineering Procedure
 - ALL Incidents (Including Workplace Violence)
 - ALL Incidents Reported and Documented
 - Download Incident & Investigation Report (EHS or MEC E Website)
 - Or see Cagri Ayranci

Training & Seminars









- General Orientation to Safety
 - This seminar
- Training
 - **WHMIS trainings**
 - **Shop trainings**
 - **Lab safety**
 - **Chemical safety**
- Lab-Specific Training
 - Given by your supervisor
 - Introduction to Lab (and Special Features)

Training: WHMIS

- Workplace Hazardous Materials Information System (WHMIS)
 - Mandatory for ALL Students and Staff
 - WHMIS training is required to get lab key
 - Purpose: Outlines Safety Principles for Handling Controlled Substances

CHECK THE SIGNS!

WATCH FOR THESE WHMIS HAZARD SYMBOLS

	CLASS A Compressed Gas		CLASS D-2 Poisonous and Infectious Material (Materials Causing Other Toxic Effects)
	CLASS B Flammable and Combustible Material		CLASS D-3 Poisonous and Infectious Material (Biohazardous Infectious Materials)
	CLASS C Oxidizing Material		CLASS E Corrosive Material
	CLASS D-1 Poisonous and Infectious Material (Material Causing Immediate and Serious Effects)		CLASS F Dangerously Reactive Material

WHMIS provides information on the safe use of hazardous materials at Canadian workplaces.

Alberta
HUMAN RESOURCES AND EMPLOYMENT
Workplace Health and Safety

For more information, visit our web site
<http://www.gov.ab.ca/hre>

Training: WHMIS

- On-line Training
 - Go to: <http://www.ehs.ualberta.ca/en/Training/WHMIS.aspx>
(Link on MecE Safety Website)
- Basic Elements:
 1. Proper Labels
 2. Current Material Safety Data Sheets (MSDS)
 - a. Readily Available to ALL Workers
 - b. Updated Every 3 Years OR
 - c. Computer with Printer Available in Lab

Training: Shop Tools

- Machinists and Technicians Available for Training
 - Basic Tools
 - Arrange Training with Roger Marchand (Shop Supervisor)
492-3639



Roger Marchand

Basic Lab Safety Elements

1. Chemical Inventory
2. Material Safety Data Sheets (MSDS)
3. Hazard Assessment
4. Working Alone Protocol
5. Chemical Spill Kit
6. 1st Aid Kit

Working Alone

- Definition: Working Without Readily Available Assistance
- Avoid Working Alone IF Possible
- Notify People of Your Intentions
- Customized Procedure for Each Lab Developed by Your Supervisor

Hazard Assessment

- Hazard Assessments Needed for Each Lab (done by your supervisor)
- Steps:
 - Review Work Activities
 - Identify Hazard (Probability and Severity)
 - Control Hazards
 - Elimination
 - Substitution
 - Engineering Controls
 - Administrative Controls
 - Personal Protective Equipment (PPE)
 - Safe Operating Procedures (SOP)

Hazardous Materials

- Chemical Inventories Needed for All Labs
 - Specify Contact and Chemical Information
 - Aides Emergency Personnel
 - Download Form from Mec E Safety Website

Personal Protective Equipment (PPE)

- Required by OH&S Code
- Many Different Types
 - Gloves
 - Aprons
 - Eyewear
 - Respiratory
- Fit testing at EHS



Transportation of Dangerous Goods (TDG)

- Receiving Dangerous Goods, e.g., Chemicals
 - Need TDG Training and Certification
 - Receive ALL Chemicals Through Shop
 - Ship ALL Chemicals Through Shop (Proper Forms and Procedures)

1st AID, etc.

- Some Shop and Office Staff Trained in 1st Aid (1st Aid and CPR)
 - Room 1-19 & 4-9
- Know Locations of:
 - 1st Aid Kit
 - Eye Wash Stations
 - Showers
 - Fire Alarm



Storage

- Store Materials Properly
 - Flammable Storage Cabinet
 - Acids Cabinet
 - Contact Tuula



Syringes and Sharps

- Proper Disposal
 - Order Container from Fisher Scientific
 - Broken Glass in Shop (Yellow Container)
- Don't Recap
Disposable Syringes
- Don't Leave
Syringes Unattended



Chemical Disposal

- Limit Use of Chemicals
- Purchase Smallest Quantity Practical
- See MSDS for Handling and Disposal
- Contact EHS for Pick Up

In Your Lab

- Housekeeping Rules
 - General Cleanliness
 - Avoid Clutter
 - No Gloves or Lab Coats Outside Lab
 - Label Containers (so others know if substance is hazardous)
 - Report Unsafe Conditions to Supervisor or Safety Committee Member



To your keys!!!

NEW THIS YEAR:

- WHMIS
- Lab safety: <http://www.ehs.ualberta.ca/Training/Laboratory%20Safety.aspx>
- Chemical Safety: <http://www.ehs.ualberta.ca/en/Training/ChemicalSafetyTraining.aspx>
- General Safety Orientation Quiz: (questions from this presentation – can be found on the web page)
https://websrv.mece.ualberta.ca/intranet/index.php/exam/exam/display_exam/1
- Then go to MECE home page: **“Key Requisition Form”**
 - **Complete the form where you will upload the certificates**
 - **This will send a reminder to your supervisor. He/She will confirm all and you will get the keys!!!**

Questions?

- Cagri Ayranci

Office: ***10-360 Donadeo Innovation Centre
for Engineering***

492 – 2791

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