Course Content

- Introduction to health and safety
- How health and safety is managed at the University
- Risk assessment in theory
- Risk assessment in practice
WHAT IS HEALTH & SAFETY?

- Health and Safety is **not** the absence of accidents or ill health

**BUT**

- the result of taking positive action to **identify causes** and **implement and maintain** suitable **preventive measures** to eliminate risk or reduce risk to an acceptable level.

- What is an acceptable level?
The greater the risk the more resources that need to be put into controlling the risk

- Time
- Money
- Effort
WHY BOTHER WITH HEALTH & SAFETY?

- People
- The Law
- Cost of Accidents
- University’s reputation
Mainly the Health and Safety At Work Act
  - and regulations made under it

Also ‘Duty of care’

University’s Policy interpererate the law
Employer’s duty to ensure, so far as is reasonably practicable, the health, safety and welfare of all his employees. In particular:

- safe plant and equipment
- safe systems of work
- safe handling, transport and storage
- information, training and supervision
- safe access and egress
- safe environment
- safety policy
- trade union consultation

Similar responsibility towards non employees
Employee’s **duty while at work:**
- to take reasonable care of his own and other peoples’ health and safety
- co-operate with employers

No person **shall interfere with or misuse** anything provided for health, safety or welfare.
Fire at Southampton University - Cost of £millions
-to deal with immediate incident
-to rebuild
-to relocate world class research work
-reputation
Plus stress on all levels of staff and students
HOW is H&S ORGANISED and MANAGED?

UNIVERSITY LEVEL

‘The University’ via the VC & Senior Staff

Heads of College

Supported by:
University ‘Workplace Wellbeing’ Team
University Policy, Guidance and Rules
College/Corporate Service (CS) Health and Safety Management

- Head of College/Registrar and Secretary
- College Board/Corporate Service Senior Officers including Board Member for Health and Safety
- Head of School/CS Departmental Managers
- Managers/Supervisors/Pi's etc.
- Individuals

Plan Health and Safety with Board Member and advise Board

College/CS Health and Safety Adviser (Appointed by Head of College/CS)

Advise

Liaise

Health & Safety personnel in Schools/CS Departments (Health and Safety Co-ordinators, Fire Safety Co-ordinators, Radiation Protection Supervisor, Chemical Safety Adviser, Biological Safety Officer)
<table>
<thead>
<tr>
<th><strong>Details for Case No. F100000448</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Defendant</strong></td>
</tr>
<tr>
<td><strong>Summary</strong></td>
</tr>
<tr>
<td><strong>Offence Date</strong></td>
</tr>
<tr>
<td><strong>Total Fine</strong></td>
</tr>
<tr>
<td><strong>Total Costs Awarded to HSE</strong></td>
</tr>
</tbody>
</table>

[Breach involved in this Case]
Workplace Wellbeing Team

Director
Mr David Harrison

- Health and Safety Unit
- Occupational Health
- Staff Support Services
- [Sustainability and Environmental Advisor]
  - Dr Trevor Shields

www.intranet.bham.ac.uk/university/hsu/advice.shtml
HEALTH & SAFETY PHILOSOPHY

H & S MUST BE MANAGED

- the creator of the risk must control the risk
- prevent accidents, incidents, ill health before they occur
- assess risk and target resources
- the greater the risk the more resources to control the risk
NEED TO MANAGE THE RISK

- Identify foreseeable hazards

*in order*

- to prevent or control them

*to*

- recognised standards

*and be able to*

- demonstrate that it is being done and the correct standards are being achieved
Examples of Accidents in Mechanical Engineering

- Lifting a flywheel, slipped through his fingers onto foot
- Coolent to grinder stopped, dust extraction caught fire
- Spark from a linisher hit person in the eye
- Cut finger on swarf
- Die on press failed and hit person in face
- Using emery paper on lathe, caught hand on chuck
- Steel bar being moved slipped through fingers
- Piece of hot weld went down a student’s back
- Injured back lifting post bags
- Cut arm using hack saw
- Using bench drill without clamping work and cut finger
Risk Assessment
HEALTH & SAFETY AT WORK ACT 1974

- Requires employers to ensure the health, safety and welfare of their employees and non employees

How can this be done without assessing the risks they face?
Specifically requires employers to carry out risk assessments

- Employers must make *suitable* and *sufficient* assessments of risks to employees and other persons arising from or in connection with their conduct or undertaking *for the purpose of identifying control measures*
Process

Identify Hazard
DEFINITIONS

HAZARD
- something with the potential to cause harm
DEFINITIONS

- **HAZARD**
  - something with the potential to cause harm

- **RISK**
  - the likelihood of that harm being realised
Process

- Clear identification of hazards
- What are the risks from the hazards?
Process

- Identify Hazard
- Assess Risk
- Manage the Risks
Identify those who may be harmed and numbers
- young persons/students
- physical impairment
- pregnant
- strength/height
- immuno-compromised

Take account of
- Some may be regulars in workplace, some not
- Staff, students, visitors, contractors, maintenance, cleaners, patients, public etc.
- Different levels of competence, knowledge, awareness, language etc.
- Away from campus, travelling, fieldwork etc.

Existing control measures
- Are they adequate?

What more do I have to do?
Process
Evaluate Risk

- Evaluating the risk
  - Separate significant from insignificant risks
Process
Evaluate Risk

- Evaluating the risk
  - Separate significant from insignificant risks

- Outcome
  - No injury / minor / major / fatal
Process Evaluate Risk

- Evaluating the risk
  - Separate significant from insignificant risks

- Outcome
  - No injury / minor / major / fatal

- Clarify why risks are significant
  - consequence
  - probability
  - frequency
  - numbers affected
Process
Evaluate Risk

- Evaluating the risk
  - Separate significant from insignificant risks

- Outcome
  - No injury / minor / major / fatal

- Clarify why risks are significant
  - consequence
  - probability
  - frequency
  - numbers affected

Can the risk be accepted?
Are existing controls Ok?
Are more controls required
**Process**

<table>
<thead>
<tr>
<th>Identify Hazard</th>
<th>Assess Risk</th>
<th>Manage the Risks by:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Elimination/ Substitution Separation</td>
</tr>
</tbody>
</table>

Controlling to Acceptable Level by:

- Procedures
- Systems
- Instructions
  i.e. Method Statements

Personal Protective Equipment

Warnings
Process
Controlling the Risk

- Can the hazard be removed altogether?

- If not, how can risks be controlled so that harm is unlikely?

- Hierarchy of controls
  - eliminate or substitute
  - engineering controls
  - administrative controls
  - personal protective equipment
  - information and instruction

- Controls
  - consider competence
  - consider emergencies etc.
  - must be maintained and monitored for effectiveness
Process
Controlling the Risk

Controlling the risk
- Is there University policy/guidance?
- Is there HSE guidance?
- Is there an industry/research standard?
- Apply hierarchy of controls
- Consider competency
- Identify emergency procedures
- Health surveillance may be required
University Health & Safety Policy & Strategy

Management Guidance
Local plans/organisation

Specific Policies
- Manual Handling
- Electrical Testing
- Fire
- Ladders
- Biological Safety
- Ionising Radiation
- Pressure Systems
- Carcinogens
- Etc....

Specific Guidance
- Risk Assessment
- Supervision
- Work Equipment
- Confined Spaces
- Laboratory Work
- Work Station Design
- Offices
- Young Persons
- Etc......
Health and Safety

Welcome to the website of the Health and Safety Unit at the University of Birmingham.

Our Mission

To support the University’s mission by promoting a healthy and safe working environment for the protection of people and the environment.

Key Objectives

- To assist the University in the efficient implementation of its Health and Safety Policy.
- To provide a professional, helpful and responsive service on Health, Safety and Environmental matters.
- To ensure the implementation of University Health and Safety Policy in areas of Audit, Inspection, Health Surveillance and Accident/Incident investigation.
- To ensure efficient and effective liaison with Statutory Authorities.
- To facilitate consultations between the University and Trade Unions on health and safety matters.

Health and Safety Unit
University of Birmingham, Edgbaston, Birmingham, B15 2TT, UK
Tel: 44 (0)121 414 5696
http://www.hsu.bham.ac.uk

http://www.hsu.bham.ac.uk
Process
Using the Assessment

- Use the assessment outcome
  - procedures (including emergency)
  - instructions
  - methods of work

- Communicate to those who need to know
  - students
  - shared premises
  - contractors
  - visitor etc.
Process Recording

- Record of the assessment
  - Signed
  - Dated
  - Specify review date
Laboratory Worker Severely Burned

Lab worker sustained severe chemical burns when she was splashed with a hot beaker of perchloric acid. She was moving a beaker of the liquid which was at 200 degrees C when it slipped from her grasp, spilled onto her clothes and burst into flames. Her leg also caught fire. She had five operations and will have permanent scarring. She was not wearing any personal protective clothing.

Company fined £25,000. Judge said “they had no proper procedure in terms of safety procedure, equipment and training……the company fell lamentably short of the standards required.”

East Anglian Daily Times

Risk Assessment?
One accident can lead to another

A Student modified a TV to take headphones.

He did not know that the set was a live chassis type.

The phones were live at 350v when he used them.

He received severe shock and burns and was rendered unconscious.

Also, as he fell he pulled the TV set down on him and his shoulder was broken.
Specific Risk Assessments

Required For

- Display Screen Assessment
- Manual Handling
- Hazardous Substances (COSHH)
## DSE Checklist

This checklist is intended to be used in conjunction with Health and Safety Guidance “Work Station Design” (GUIDANCE/5W/D/98)

<table>
<thead>
<tr>
<th>A. The Chair</th>
<th>Yes</th>
<th>No</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.1. Is your chair stable and supportive?</td>
<td>☐</td>
<td>☐</td>
<td>If no, please contact Health and Safety Co-ordinator to discuss you chair</td>
</tr>
<tr>
<td>A.2. Does your chair adjust in height?</td>
<td>☐</td>
<td>☐</td>
<td>If no a new chair may be required</td>
</tr>
<tr>
<td>A.3. Have you adjusted the chair height?</td>
<td>☐</td>
<td>☐</td>
<td>Adjust the chair height to allow you to sit with elbows at approximately 90° and approximately 1° above the desk when touching the G and H keys</td>
</tr>
<tr>
<td>A.4. After adjustment can you sit with your feet flat on the floor?</td>
<td>☐</td>
<td>☐</td>
<td>If you cannot sit with your feet flat on the floor you may need a footrest, please contact local Safety Representative</td>
</tr>
<tr>
<td>A.5. Does the backrest adjust in both height and tilt?</td>
<td>☐</td>
<td>☐</td>
<td>If no please contact Health and Safety Co-ordinator to discuss your chair requirements</td>
</tr>
<tr>
<td>A.6. Have you adjusted the backrest to fit you?</td>
<td>☐</td>
<td>☐</td>
<td>Adjust backrest height to fit you in the lower back. Adjust the tilt to allow support in the lower back without pushing you forward or forcing you to lean back</td>
</tr>
<tr>
<td>A.7. Does your chair have arms?</td>
<td>☐</td>
<td>☐</td>
<td>If no please go to Section B, The Desk</td>
</tr>
<tr>
<td>A.8. If yes do the arms prevent you from easily sitting close to the desk?</td>
<td>☐</td>
<td>☐</td>
<td>If the arms adjust, lower them to allow you to pull the chair forward to closer proximity to the desk. If the arms do not adjust a different chair may be required</td>
</tr>
</tbody>
</table>

Please go to next section
Process

Identify Hazard
Assess Risk

Manage Risks by Elimination/Control to Acceptable Level

Monitor
Review

Procedures
Systems
Instructions
Warnings
i.e. Method Statement
REVIEW & REVISE

- Significant changes, revise assessment
  - workplace changes, new substances, procedures, equipment etc.

- Good practice to review anyway

- Some assessments (COSHH) must be reviewed at specific periods

- Don’t amend for trivial changes

- Walk round, look, ask people, look at accident statistics, manufacturer’s instructions, data sheets etc.
Case Study

Working at height
Hazard – working at heights – falls, well known

Risk – high, well known

Eliminate

Control
• Work at height regulations
• University guidance on work at heights
• Competent Contractors
• Selection of equipment
• Training of operatives
• Supervision
• Inspection arrangements
• Monitoring arrangements
Case Study

Storage of flammable and hazardous materials

Risks known
Follow University’s Hazardous Substances Policy - particularly storage section.

Inspect against this plus housekeeping issue
Risk assessment may consider:

Are loose gas cylinders required?
- pipe in direct from a permanent installation

Is such a large quantity of oil required?

Inspection may consider:

Who is responsible/why such a mess?

Why was the rubbish not cleared away?
- supervision
# Hazard and Risk Assessment Summary

**School/Dept:** Metallurgy  
**Assessor:** A Smith  
**Location of Activity:** Hygrogen Laboratory  
**Date of Assessment:**  
Activity Assessed: Use of Laboratory

## Assessment of Hazard and Risk

(List only hazards from which there is a significant risk of serious harm under foreseeable conditions)

<table>
<thead>
<tr>
<th>HAZARD</th>
<th>PERSONS AT RISK</th>
<th>PERSONAL HARM?</th>
<th>LIKELIHOOD of HARM?</th>
<th>Control Measures Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible hydrogen leaks over night</td>
<td>S (3) Pg (4)</td>
<td>X</td>
<td>X</td>
<td>Detectors installed and procedure in place if activated</td>
</tr>
<tr>
<td>Use of flammable gases</td>
<td>S (3) Pg (4)</td>
<td>X</td>
<td>X</td>
<td>Minimum amount stored in lab, cylinders secure, cylinders and regulators in good condition University policy compiled with Hazardous Substances, staff and students trained</td>
</tr>
<tr>
<td>Use of chemicals</td>
<td>S (3) Pg (4)</td>
<td>X</td>
<td>X</td>
<td>University Hazardous Substances Policy complied with, CSHH assessments done</td>
</tr>
<tr>
<td>Use of 415V lathe</td>
<td>S (3) Pg (4)</td>
<td>X</td>
<td>X</td>
<td>Correctly maintained, all users trained</td>
</tr>
<tr>
<td>Manual handling of dielectric</td>
<td>S (3) Pg (4)</td>
<td>X</td>
<td>X</td>
<td>Manual handling assessment carried out, lifting equipment available</td>
</tr>
</tbody>
</table>

## Key

<table>
<thead>
<tr>
<th>PERSONS AT RISK</th>
<th>PERSONAL HARM?</th>
<th>LIKELIHOOD</th>
<th>Risk Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ug Undergraduate</td>
<td>F Fatality</td>
<td>Y Yes/Very High</td>
<td>Y = Significant Risk</td>
</tr>
<tr>
<td>Pg Postgraduate</td>
<td>M Major Injury</td>
<td>P Probable</td>
<td>P = Remote</td>
</tr>
<tr>
<td>S Staff</td>
<td>Mi Minor Injury</td>
<td>F = Significant Risk</td>
<td></td>
</tr>
<tr>
<td>C Contractor</td>
<td></td>
<td>R Remote</td>
<td>M = Significant Risk</td>
</tr>
<tr>
<td>V Visitor</td>
<td></td>
<td></td>
<td>X = Significant Risk</td>
</tr>
<tr>
<td>Ps Patient</td>
<td></td>
<td></td>
<td>X = Significant Risk</td>
</tr>
<tr>
<td>Pu General Public</td>
<td></td>
<td></td>
<td>X = Significant Risk</td>
</tr>
<tr>
<td>Yp Young Person</td>
<td></td>
<td></td>
<td>X = Significant Risk</td>
</tr>
<tr>
<td>Nm New/Expectant Mother</td>
<td></td>
<td></td>
<td>X = Significant Risk</td>
</tr>
</tbody>
</table>

## Risk Significance

- **F** Fatality: Loss of life  
- **M** Major Injury: Long-term loss of or damaged eye  
- **Mi** Minor Injury: Loss of consciousness  
- **P** Probable: Acute illness needing medical treatment  
- **Po** Possible: Permanent ill health or disability  
- **R** Remote:
Summary

- Understand activity
- Identify hazards
- Identify those who might be harmed
- Evaluate the risk
- Control the risk
- Record the assessment
- Review and revise

- Use the assessment to formulate procedures etc.