

AS LEVEL Section D

FACT FILES

Technology & Design

For first teaching from September 2011

For first award in Summer 2012

Safety



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and  
design



### Learning Outcomes

#### Students should be able to:

- demonstrate knowledge and understanding of safety requirements to include:
- five stage risk assessment;
- Health and Safety at Work Act;
- COSHH



### Course Content

#### Five Stage Risk Assessment

Workers need to be provided with a safe working environment, so employers now develop risk assessments to reduce the chance of accidents and injuries in the workplace. Employers must ensure that they have taken sufficient precautions to limit accidents otherwise they can be taken to court or face higher insurance costs. In order to reduce the risks a risk assessment has to be carried out.



A risk assessment is a document, usually in the form of a spreadsheet, which details the hazards which exist, what the risk level is, who might be injured and what action has been taken to reduce the risk.

Employers don't have to remove the risks all together, but must at least make efforts to reduce them. An effective way to produce a risk assessment is in five stages.

#### Stage 1: Identify the hazards:

- By looking around the workplace an employer can identify where a worker might be injured.
- By asking employees where they feel there is potential for accidents they can make sure nothing obvious is missed.
- Check information from suppliers regarding machinery, chemicals and other consumable materials, and use data sheets where possible.



#### Stage 2: Decide who might be harmed:

- This would involve taking note of the risk and what type of worker it affects, for example, using a centre lathe would mostly affect the machinists/operators. This would also involve the potential injuries which may be caused in this area.
- Include visiting members of the public and how they might be injured.



### Stage 3: Evaluate the risks, decide on precautions.

Look at what can be done to reduce/minimise the risk by removing the hazard or controlling it so accidents are less likely, this can be done by:

- Using guards, protective clothing and hazard warning signs around machinery.
- Use less dangerous/hazardous materials, use a safer chemical etc.
- Provide health and safety training and first aid facilities.



### Stage 4: Record and implement the findings:

- Make a note of the risks and hazards that have been identified and produce a plan of how the workplace can be made a safer and less hazardous environment.
- Make changes and improvements to this plan and prioritise the risks that need to be addressed first.



### Stage 5: Review and update the Risk Assessment:

- When new equipment and machinery is installed or new materials are used in a new product then it will be important to make changes to the risk assessment so that it can be kept up to date.
- Employees might identify problems with the risk assessment and changes may be required to improve it.

Below is an example of a risk assessment for a school project.

Process/Task	What are the hazards?	Who might be harmed?	What action is necessary?	When was the action taken?
Drill 4mm hole in acrylic	Acrylic might catch on drill.  Acrylic might crack.	Person using drill.  Persons standing close to the drill	Use a a clamp to hold acrylic firmly on table.  Use a plastic drill bit with the correct grind. Drill on a smooth flat surface to support acrylic.  Wear safety glasses. Yellow hazard tape mark limit around drill.	23/02/11

### Health and Safety at Work Act

This deals with the safety and welfare of employees and how employers should provide it.

Risk assessments must be produced by employers as well as the provision of safe working conditions, however, employees must also follow the safe working practices provided by their employer.

### Health and Safety at work (1974) act ensures employers:

- Provide a risk assessment to reduce hazards in the workplace.
- Record and regularly maintain equipment and machinery.
- Training for employees in the use of the machines and techniques.
- Provision of proper health and safety equipment for employees.
- First aid facilities and safe storage of chemicals and materials.



## Control Of Substances Hazardous to Health

Control Of Substances Hazardous to Health regulations (COSHH) 2002 is designed to protect employees in the workplace from hazardous substances, which would include the storage and handling of hazardous substances.

The regulations inform the employers how these chemicals and materials should be handled and stored safely.



Employees may come into contact with substances which contain fumes, toxins, irritants or dust. Protective clothing and safety signs are the most common methods employers use to meet the COSHH requirements. The following are some of the substances that COSHH consider hazardous:

- chemicals and products containing chemicals;
- fumes;
- dusts;
- nanotechnology; and
- gases.

Like Risk Assessments, employers have to ensure that they take the correct precautions to prevent any injury to their employees when dealing with hazardous materials and chemicals. Workers must also be properly trained in the handling of the materials and substances to reduce the risk of accidents.



### Revision questions

1. What is a risk assessment? [1]
2. Give **two** possible reasons why it might be beneficial for an employer to produce a risk assessment. [2]
3. COSHH is an important regulation to protect employees. Give **two** instances how it might protect employees. [2]
4. Describe **two** ways which an employer can provide a safe working environment for their workers. [2]