

AS LEVEL Section A

FACT FILES

Technology & Design

For first teaching from September 2011

For first award in Summer 2012

Safety



tech
nology
and
design

1.11 Safety



Learning Outcomes

Students should be able to:

- demonstrate knowledge and understanding of:
- risks associated with common manufacturing and hand processes and methods used to minimise them;
- employee and consumer safety;
- Trades Description Act;
- British Standards, Kite-Marking.



Course Content

Risks associated with common manufacturing



When a product is being manufactured, a range of machines and hand tools will inevitably be used. Therefore it is important at both the design and manufacturing stages that this work is carried out in safe conditions.

Manufacturers have a legal responsibility to ensure the safety of their employees and that all hazards have been reduced to a minimum to remove the risk of any accidents.

Accidents of course can happen but by assessing the risks beforehand workers can work in a safer environment. This can be done by:

- Identifying the hazard.
- Identifying who might be injured.
- Looking at the risks and decide how they can be avoided.

Type of Processes	Associated Risks	Methods to minimise
Manufacturing processes	<ul style="list-style-type: none"> • Dust, swarf, splinters ejected from machine. 	<ul style="list-style-type: none"> • Use machine guards and or safety glasses. • Correct lighting and suitable ventilation.
	<ul style="list-style-type: none"> • Long hair, loose clothing, jewellery can get caught in the moving parts of the machine. 	<ul style="list-style-type: none"> • Correct training given.
	<ul style="list-style-type: none"> • Some machines (centre lathe) may cause an electric shock. • Sharp edges of cutting tools and edges of machine parts can cause injury. • Dust can be inhaled. 	<ul style="list-style-type: none"> • Electrical isolators to prevent electric shock to the user. • Regular safety checks and maintenance procedures.
	<ul style="list-style-type: none"> • Material is not held securely causing injury to the user. 	<ul style="list-style-type: none"> • Use vices or clamps to grip material securely.
	<ul style="list-style-type: none"> • Running the machine at an unsuitable speed can cause material to be violently ejected from the machine. 	<ul style="list-style-type: none"> • Extend guards down to cover drill bit when placing material for drilling.

Hand processes	<ul style="list-style-type: none"> • Injury to user. 	<ul style="list-style-type: none"> • Always secure the material before cutting/wasting.
	<ul style="list-style-type: none"> • Maintenance and condition of hand tool. 	<ul style="list-style-type: none"> • Regularly sharpen hand tools such as saws and chisels.
	<ul style="list-style-type: none"> • Tools falling off benches. • Tools breaking or handles falling off. 	<ul style="list-style-type: none"> • Damaged tools should be discarded.
	<ul style="list-style-type: none"> • Tools slipping in the users hand. 	<ul style="list-style-type: none"> • Tools should not be carried in the workshop. • Correct instructions given.

Employee Safety



Employers can ensure their worker's safety by:

- giving them the correct training in their particular tasks, this may also include basic first aid training.
- providing them with appropriate health and safety clothing.
- making them aware of hazards/risks by displaying safety signage in the work area.
- correct ventilation and lighting in the work area, dust and fumes are extremely hazardous, especially if workers are exposed to this on a daily basis.

Manufacturers can ensure the safety of the consumer by

- manufacturing products to internationally recognised standards, such as the British Standards Institute.
- providing instructions in the correct use of the product.
- providing customer care and warranties.
- using components which are tamper proof e.g. sealed plugs or security screws.

Trades Description Act

The Trades Description Act was an act brought in by the government in 1968 to protect consumers from shops or traders selling goods which were falsely described, or goods which claimed to do something they didn't.

If a company or person sells a product that does not perform as advertised then that company or person can be held liable.

Products must be correctly described on or in their packaging, advertising or verbal description by the seller.

This would also apply to products being of a satisfactory quality, for example purchasing a product which breaks after a short period of use.

British Standards, Kite Marking



British Standards are an organisation that ensure products meet industry and consumer standards. It is an independent organisation which is not government or industry owned so that it can be impartial and fair.

A standard allows companies to ensure their products meet a recognised standard, thereby ensuring quality and fit for purpose.

A standard could be a specific size or a specific material, for example, a seat belt design for a car must meet specific safety standards, in terms of its size, material used and construction.

Standards make our lives safer and easier, if products like electrical plugs were different sizes or batteries weren't available in a standardised set of sizes our lives would be more difficult.

Companies who want their products to meet British Standards must have them tested to British Standard requirements. If a company meets these standards it is awarded the BSI Kitemark for use on its products. This kitemark assures customers they are purchasing a product which is safe and fit for use.



Revision questions

1. There are risks associated with common manufacturing processes and appropriate procedures used to minimise them.
 - (i) For a specific machine manufacturing process, briefly outline **one** main associated risk and one method used to minimise it. [2]
 - (ii) For a specific hand manufacturing process, briefly outline **one** main associated risk and one method used to minimise it. [2]
2. Explain why a manufacturer would want to have a BSI Kitemark logo on their product? [2]
3. Describe **two** ways the Trades Description Act protects consumers [2]
4. Having standards benefits manufacturer as well as consumers. Describe how a manufacturer would benefit from the British Standards testing. [2]

