Student's Name: Date:

Safety in Product Design

Safety is one of the main considerations in the design of any product. When designing care should be taken to ensure that products are not only safe to use but also that they are safe to make and safe to dispose of at the end of their useful life.

Safety Standards



The British Standards Institution is an agency who test the safety of a wide range of products and approve them if they are safe. If a product carries the British Standards Institution Kite Mark it means it has been tested and has met the safety standards required. Many of the products have gone through rigorous tests.
(**N.B.** The fact that a product carries the Kite Mark only means that it has passed the relevant safety standards - it does not necessarily mean that it is a 'good design')

CE Mark



The CE Mark indicates that the product bearing it is intended for sale in the European Community and that the manufacturer claims that it meets the relevant safety requirements.
The manufacturer has to keep records to show how the product has been tested otherwise they can be fined.

The Lion Mark



The Lion Mark was developed in 1988 by the British Toy & Hobby Association as a symbol of toy safety and quality.
The Lion Mark is only used by BTHA members which includes many major international and European companies. BTHA members supply around 95% of all the toys sold in the UK.
The British Association of Toy Retailers use the same symbol on their member's shops. This shows that the shop has made every efforts to ensure the toys they sell are safe. Shop staff are trained on toy safety matters such as age warnings and similar.

The 'Choke Test'



The 'Choke Test' is a test that all toys / toy parts for children under 3 years of age must pass if they are to be sold in this country. It consists of an angled tube into which the toy to be tested is put. If the toy fits entirely into the tube (with nothing sticking out) the product fails the test.

Questions 4u2 do A.

1. Draw the relevant symbols in the spaces below.

BSI Kite Mark	CE Mark	Lion Mark	Age Restriction Mark

Health & Safety

Regulations

There are a number of regulations and codes of practice which relate to safety in the Workplace. These include COSHH Regulations *(Control of Substances Hazardous to Health)* and the Safety at Work Act.

HSE

The Health and Safety Executive (HSE) are responsible for the rules which control risks to health and safety arising from work activity in Britain. Their job is to protect workers health and safety by making sure risks in the workplace are properly controlled. They look after health and safety in factories, farms, hospitals, schools, gas and oil installations, the movement of dangerous goods and substances and railway safety. They try to ensure the protection of both workers and the public.

COSHH Regulations

The Control of Substances Hazardous to Health Regulations 2002 (COSHH) require employers to control exposure to hazardous substances to prevent ill health.

Hazardous substances covered by COSHH
COSHH covers substances which can cause ill-health. For example:

- chemicals or mixtures of substances classified as hazardous to health
- substances with occupational exposure limits
- biological agents eg. bacteria and other microorganisms
- levels of dusts
- any other substances which have similar hazards to health

COSHH does not cover:

- asbestos and lead (which have separate legislation)
- substances only hazardous because they are radioactive
- explosive or flammable substances
- chemicals at high temperature / pressure.

Other laws apply in these cases.

Risk Assessment

Risk assessment is the analysis of an activity to identify if it could cause harm to anyone. It helps you to check whether you need to change the way things are done so that nobody is hurt. You need to think about how the product will be made, how it will be used, where it will be used, how it will be stored, carried, disposed of and so on. You need to identify possible hazards and the likelihood of the hazards occurring.

There are very strict rules and regulations which manufacturers in this country must stick to. Companies need to assess all the risks related to the work they carry out and identify what precautions they need to put in place to comply with the law. Companies are required to keep up-to-date risk assessment records which must be regularly reviewed.
Risk Assessments do not have to be overly complicated. The time you put into them should take into consideration how significant the hazards are.

In the Design & Technology Department at St John Fisher we have our own Risk Assessment form which is shown below.

When carrying out a risk assessment you need to consider the likelihood of an accident occurring and the degree of injury which could result. This enables you to find the 'Risk Assessment Value'. Any activity with a Risk Value of 8 or more should not be undertaken. Where the Risk Value is 5 or 6 the activity should only be carried out under close teacher supervision.

Likelihood	Degree of injury				
	Minor	First aid required	Up to 3 days off	More than 3 days off	Permanent disability
Negligible	1	2	3	4	5
Unlikely	2	4	6	8	10
Often	3	6	9	12	15
Frequently	4	8	12	16	20
Invariably	5	10	15	20	25

Questions 4u2 do (B).

2 Use the table above to carry out a Risk Assessment for using the pillar drill to make a 6mm hole in a piece of 2mm thick sheet steel.

Activity:

Possible Hazards:

Safety Measures:

Risk Assessment Value:

Additional Safety Measures to be introduced:

Health & Safety

Questions 4u2 do (C).

3. Find as many products as you can that carry the BSI Kite mark and list them below.

4. When designing toys for young children safety is obviously very important. List some of the possible hazards which need to be avoided.

5. Who are the HSE and what do they do?

6. What do the letters COSHH stand for?

7. Make the choke test tube at the back of this booklet and use it to test the safety of the toys your teacher provides you with. Record you results on the table below.

TOY	A	B	C	D	E	F
Pass						
Fail						

Health & Safety

Consumer Protection.

For many products there are laws and standards that the designer must meet. These help to protect the users by specifying certain requirements that products must meet. The Laws also allow consumers to get their money back if goods are found to be faulty or if products do not perform in the way claimed by the manufacturer.

The Consumer Protection Act 1987

This protects the public by:

- prohibiting the manufacture and supply of unsafe goods
- making the manufacturer or seller of a defective product responsible for damage it causes
- allowing local councils to seize unsafe goods and suspend the sale of suspected unsafe goods
- prohibiting misleading price indications

The Trade Descriptions Act 1968

The Trade Descriptions Act makes it an offence for a trader to make false or misleading statements about goods or services. It carries criminal penalties and is enforced by Trading Standards Officers. It is an offence for a trader to:

- apply a false trade description to any goods
- supply or offer to supply any goods to which a false trade description has been applied
- make certain kinds of false statement about the provision of any services, facilities or accommodation

The Consumer Rights Act 2015

The Consumer Rights Act covers product quality. Under the Consumer Rights Act all products must be of satisfactory quality, fit for purpose and as described. All products - whether physical or digital - must meet the following standards:

Satisfactory quality

Goods shouldn't be faulty or damaged when you receive them. The quality should be a fair reflection of how much the goods cost. For example, bargain bucket products won't be held to as high standards as luxury goods.

Fit for purpose

The goods should be fit for the purpose they are supplied for, as well as any specific purpose you made known to the retailer before you agreed to buy them.

As described

The goods supplied must match any description given to you, or any models or samples shown to you at the time of purchase.

Your rights under the Consumer Rights Act are against the retailer (the company that sold you the product) not the manufacturer.

What you can claim depends on how much time has passed since you made the purchase. Under the Consumer Rights Act you have a legal right to reject goods that are of unsatisfactory quality, unfit for purpose or not as described, and get a full refund as long as you do this quickly. This right is limited to 30 days from the date you buy your product. After 30 days you will not be legally entitled to a full refund if your item develops a fault, although some sellers may offer you an

extended refund period. This right doesn't apply to purely digital products such as music, games or apps that you buy as downloads. You can however ask for a digital product to be repaired or replaced if it develops a fault.
The 30 days is shorter for perishable goods. For example, milk would be expected to last until its use-by date as long as it's stored correctly.

If you are outside the 30-day period you have to give the retailer one opportunity to repair or replace the goods. You can ask the retailer to either repair or replace faulty goods but it can choose whichever would be cheapest or easier for it to do.
If the attempt at a repair or replacement is unsuccessful, you can then claim a refund or a price reduction if you wish to keep the product.

You're entitled to a full or partial refund instead of a repair or replacement if any of the following are true:

- the cost of the repair or replacement is disproportionate to the value of the goods
- a repair or replacement is impossible
- a repair or replacement would cause you significant inconvenience
- the repair would take an unreasonably long amount of time

If a repair or replacement is not possible you have the right to reject the goods for a full refund.
If you don't want a refund and still want your product repaired or replaced, you have the right to request the retailer makes further attempts at a repair or replacement.

If you discover the fault within six months of purchase, it is presumed to have been there since the time of purchase unless the retailer can prove otherwise. It's not up to you to prove that it was.

Questions 4U2do (D).

8. Describe some of the ways the law protects the rights of 'consumers'.

Health & Safety

St John Fisher Catholic College

COSHH guidelines

A COSHH assessment is a systematic examination of a task or process that involves using a potentially hazardous substance. It is the School's policy that no hazardous substance shall be used until an assessment has been undertaken and suitable control measures implemented.

Hazardous substances include;

- Substances used directly in work activities (eg adhesives, paints, cleaning agents)
- Substances generated during work activities (eg fumes from soldering and welding)
- Naturally occurring substances (eg grain dust)
- Biological agents such as bacteria and other micro-organisms.

Hazardous substances should carry a warning label such as those below;



Harmful | **Toxic** | **Highly Flammable** | **Corrosive** | **Dangerous to the Environment** | **Explosive** | **Oxidising**

Examples of the effects of hazardous substances include;

- Skin irritation or dermatitis as a result of skin contact;
- Asthma as a result of developing allergy to substances used at work;
- Losing consciousness as a result of being overcome by toxic fumes;
- Cancer, which may appear long after the exposure to the chemical that caused it;
- Infection from bacteria and other micro-organisms (biological agents).

Is the substance necessary?

Departments should identify and make an inventory of all substances used at school which carry a warning label. Having identified all the substances they should ask the following questions of each substance-

- Is the substance used for the same purpose as any other of the substance(s) on the list? If YES - is it needed? **If not, dispose of it appropriately.**
- Is the substance only used occasionally, if so, is it really needed? **If not, dispose of it appropriately.**
- Could the substance be substituted by a less hazardous product? **If yes, dispose of it appropriately.**

Hazard Data sheets / Risk Assessment;

Suppliers are required to provide a hazard 'Data Sheet' for any hazardous substances they supply. If this is not provided it must be obtained. The Data Sheet should be used to help produce a Risk Assessment.
A copy of the completed Risk Assessment Form, along with the Data Sheet, should be kept with the substance and a copy retained by the user(s).

If any 'control measures' used incorporate an engineering control, such as exhaust ventilation, then these should be examined and tested annually and records kept.

All employees are required by law to use any control measures and safe systems of work which have been introduced. They must also report any defects in the control measures to the Health & Safety co-ordintaor.

In the event of an Accident;

In the event of an accident occurring when using a hazardous substance the First Aid Personnel attending should be informed immediately about the substance being used and provided with the relevant Data Sheet.

Emergency procedures in the event of an accidental spillage;

For small spillages of hazardous substances the Science Lab technicians have chemical spill kits which they are trained to use. For larger spillages the site supervisor should be called immediately.

R Milan 2012

AQA General Certificate of Secondary Education

Design and Technology: Product Design

Unit 1 Written Paper

To help you prepare for the written exam

Q. 1 Give five safety precautions a user needs to consider when using any cutting tools. [5 marks]

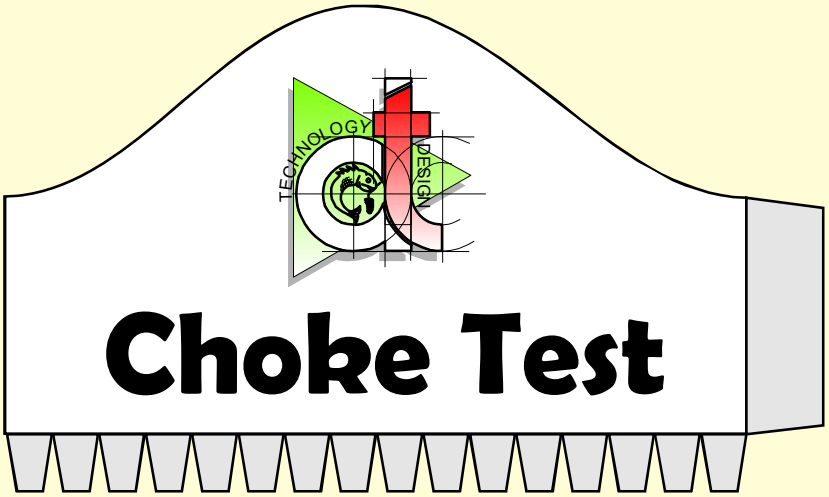
Q. 2 Analyse and evaluate the playground equipment in terms of inclusion of safety features. [4 marks]

Exam Advice

In the exam you are likely to have to describe how to manufacture a product. You will be expected to identfy the possible hazards and how they can be minimised. You may be asked about the law and the legal requirements companies have to protect their employees / consumers.

List of CGP Revision questions:

E13 Working Safely



Health & Safety