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INTRODUCTION

The importance of effective risk management and audit techniques cannot be over-emphasised with regard to preventing accidents and loss at work. There are six principles for accident prevention:

The Management of Health and Safety at Work Regulations 1999 and Bracknell Forest Borough Council's safety policy determine that we need to carry out a risk assessment for all significant risks to our staff, visitors and others. Enclosed is a sample of the risk assessment form you should use for your Department. The form should be completed as a record of the process of risk assessment, for each of the activities undertaken by staff under your control. The form should then be used to manage both the implementation of existing controls, and the implementation of any new arrangements you have decided to adopt to improve safety.

PRINCIPLES OF RISK ASSESSMENT

- Top management must take the lead in organising safety at work.
- Accident prevention is an essential part of good management and working practices.
- Management and workers must co-operate wholeheartedly to secure a safe working environment, free of accidents.
- There should be a definite and known safety policy in each workplace.
- Sufficient resources and competent organisation to carry out the policy must exist.
- The best available knowledge and methods must be applied to achieve safe systems of work.

WHAT IS AN ACCIDENT?

A good legal definition of an accident was given in the case of *Fenton v Thorley & Co Ltd (1903)* as follows:

"Some concrete happening which intervenes or obtrudes itself upon the normal course of employment. It has the ordinary everyday meaning of an unlooked-for mishap or an untoward event, which is not expected or designed by the victim". In other words – an accident is an unlooked-for mishap or untoward event, which is neither expected nor designed by the victim.

A wider view should make you consider the following:

- (a) the causes – ie: unexpected or unplanned events
multi causes – "domino" effect sequence of events leading to an accident
- (b) the effects – injury, disease, damage, near miss and loss

A final definition of an accident therefore could be as follows:

"An accident is an unexpected, unplanned event in a sequence of events, but occurs through a combination of causes and results in physical harm (injury or disease) to an individual, damage to property, a near miss, a loss or any combination of these effects".

WHAT IS: HAZARD, RISK, AND DANGER?

- (a) **Hazard** – is defined, as the potential to cause harm – is quantifiable and associated with degrees of danger.

- (b) **Risk** – defined as the probability or likelihood of a hazard causing harm in particular circumstances.

Risk can be thought of as chance taking, i.e.: what are the odds of X happening if we do Y?

The link between risk and hazard must be very clearly understood. For example: poor safety controls can create a substantial risk even from a substance or work practice with a low hazard/danger element. With good safety controls, the risk of harm, even when dealing with eg: highly dangerous substances, is greatly reduced.

- (c) **Danger** – associated with:

- (i) Interchanges of energy above tolerance levels, eg: a hand in a moving part of machinery which is inadequately guarded – the hand is in the danger area – injury results as the energy interchange is above the tolerance level of the hand.
- (ii) The organisation's financial well-being placed at risk due to deficiencies in management – design – quality production capabilities or deficiencies, lack of resources or failure to meet its legal obligations. For example, when an HSE Inspector serves a Section 22 prohibition notice – this notice is designed to prevent the use of a risky process, dangerous machine or unsafe system of work likely to cause serious injury.

It may even bring the whole workplace to a shutdown, thereby incurring huge financial losses not recovered from insurance since this is a consequential financial loss. Hence if profit margins or budgets or morale in an organisation are already tight, then the whole business and its overall financial liability or status/public confidence may be threatened.

SO HOW DO I RISK-MANAGE MY ORGANISATION?

By learning risk management skills, you will be able to eradicate or minimise adverse or harmful effects either produced within your organisation or to which you are exposed, eg: outside contractors, parents, etc.

The principles are as follows:

- | | | |
|------------------------------|---|------------------------------------|
| 1. Risk identification |) | |
| 2. Risk evaluation |) | IDENTIFY, EVALUATE, CONTROL |
| 3. Risk control measures and |) | AND MONITOR |
| 4. Monitor the controls. |) | |

You will find these principles enshrined in safety regulations and directives or codes of practice produced since 1988 so it is essential you comprehend and embrace them if you wish to carry out successful safety and risk management techniques within your organisation.

1. Risk identification

Includes physical inspections
Management/work discussions/consultations
Safety audits
Job safety analysis and evaluations
HAZOP studies
Study of past accidents – use of accident records

2. Risk evaluation

Your measurements should be based on the economic, social or legal considerations and implications.

- (a) economic - financial impact on the organisation
 - cost of the uninsured risk - consequential losses?
 - increased insurance premiums
 - overall profitability effects on the organisation
 - loss of production, eg: following issue of improvement or prohibition notices or
 - an accident at work.
- (b) Social – moral and humanitarian considerations for your staff’s well-being. Interaction with the general public, eg: those that live within the organisation’s location or its consumers, eg: the parents, pupils, neighbouring residents – other commercial operations who inter-act with you.
- (c) Legal – consideration should include possible constraints from compliance with current health and safety legislation, codes of practice, guidance notes and accepted standards plus the legislation, eg: fire prevention, environmental/pollution and product liability.

NB – the probability and frequency of each occurrence and the severity of the outcome (including an estimation of any maximum potential loss) also needs to be incorporated into your evaluation.

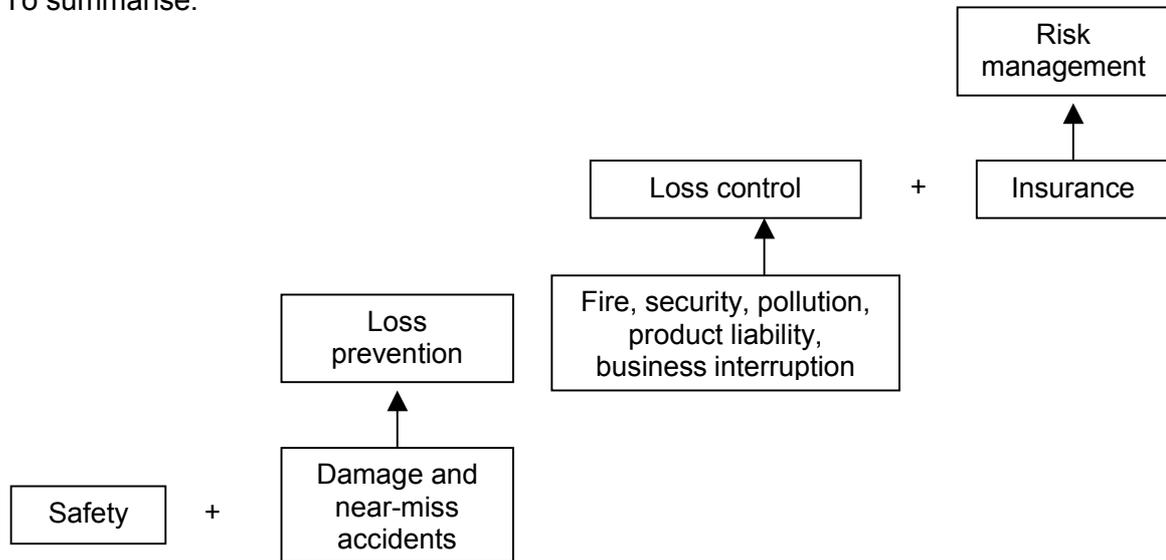
3. Risk control

Your strategies for risk control can be classified as follows:

- (a) Risk avoidance – do you need to produce the risk in the first place or can you apply eg: different working practices to avoid these risks completely? Or, can you use eg: substitute chemicals less harmful than those previously ordered?
- (b) Risk retention – where the organisation is prepared to finance any consequential losses produced – two types:
 - (i) risk retention with knowledge – ie: a conscious decision by the company is made to meet resulting consequential losses produced by retaining the risk or practice which has been identified and evaluated.
 - (ii) risk retention without knowledge – resulting from ignorance/lack of knowledge of the existence of the risk or an omission to insure against it – ie: the risks have neither been identified nor fully evaluated – or ignored! There are heavy penalties in this category – be warned!
- (c) Risk transfer – ie: by transferring (by legal assignment) the cost of potential losses from one party to another, eg: the insurance company. Risk transfer by its very nature can only ever be of limited benefit and care should be taken within any organisation that a “comfortable cushion” syndrome does not evolve whereby the individual organisation believes that the insurance policy will cover all and any mishap.
- (d) Risk reduction – by implementing a loss control system, which aims to protect the organisation’s assets from wastage caused by accidental loss – whether human, or

material. An effective programme of reporting, investigation and recording all accidents or near misses where the risk potential is high can implement loss control techniques. Then co-ordinate action to reduce the loss. The major insurance companies who can provide important additional help and information in this area as well as reducing your insurance premiums have perfected loss control techniques.

To summarise:



An effective loss control programme can substantially reduce hazards and risks within an organisation, improve its profits, morale and greatly assist legislative compliance with an end result of less accidents and injury.

4. **Monitoring the risk controls**

This needs to be done continually and provision for a completely independent audit should also be carried out at least once yearly.

ACCIDENT CAUSES AND UNDERSTANDING WHY THEY HAPPEN

(i) Sequence of events – Domino Theory (Heinrichs 1959 - Industrial Accident Prevention)

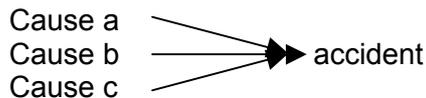
event A → event B → event C → accident → effect

Accident prevention aims to remove event “C” as minimum.

(ii) Modified Domino Sequence (Bird and Loftus, Loss Control Management, 1976)

management: lack of control
↓
basic causes (eg: personal/job factors)
↓
immediate causes
↓
resulting accident
↓
loss (minor, serious or catastrophic)

(iii) Multiple Causation Theory



(Gordons Theory used epidemiological techniques – the victim is classed as the host, the agent is the injury deliverer and supporting environment – he reasoned one needed to study all three of their interactions to understand the causes of accidents and their prevention.)

(iv) Failure modes and effects

This technique analyses and evaluates the kinds of failures that could happen and their likely effects. It uses a predictive model and forms part of an overall risk assessment study.

(v) Fault tree analysis

Another analytical technique – traces (chronologically) events contributing to the accident event and is useful in accident investigations.

It is important to realise those accident prevention techniques and risk management systems can make a significant difference to the overall reduction of harm, loss and injury within the organisation as well as fulfilling legal, humanitarian and economic requirements.

The hidden costs of an accident or incident at work can be summarised as follows:

- Administrative/accident investigation costs
- Medical treatment fees
- Lost time to injured party and other employees
- Cost of replacement labour
- Payments to injured party
- Lost production plus business interruption
- Repair costs to damaged plant/materials
- Loss of staff moral and increased conflict
- Loss of business reputation
- Other costs, eg: litigation, evidence collection, etc

NB: Use the above to argue your case for more resources/funding for safety and risk management.

GUIDANCE NOTE FOR USING THE RISK ASSESSMENT FORM CORRECTLY

1. Use a new form for each area in the building, such as a classroom, laboratory, workshop or sports changing rooms. For managers with staff who undertake very different types of work, use a new form for each type of activity, range of duties or categories of staff, eg: teacher, caretaker, parental volunteers.
2. For each activity – ask yourself what could happen, what could go wrong, how could one of the staff, yourself or a colleague or a visitor, have an accident, or be harmed in some way during this activity? Think in terms both of threats to personal safety and also any health effects, which could arise, for example from the use of hazardous substances in the school laboratory to a potentially unsafe system of work.

3. Optional risk rating – this is not essential, but may be done if you wish:

For each hazard, rate the risks – if the harm is very likely it scores 3 under probability; if it is very unlikely, it scores 1. If the harm does arise, how serious will it be – worst case, a bruise means that it is minor whereas a bad head injury is critical? If you take the probability factor and multiply it by the severity factor, you get a risk factor ie: probability x severity = risk. Risks, which score low, do not require much intervention; those which score highly deserve to be treated with respect and care taken to avoid or minimise them. Note: you should rate the risks on the basis of the current controls in place.

4. The central aim of risk assessments is to establish appropriate controls. You have identified some hazards, and the important part is managing the work and the premises to minimise them. List the controls already in place, and add any, which you feel, may be needed to protect properly against accidents and injuries.
5. On completion, discuss the outcome with a colleague to check and see if others have come to similar conclusions.
6. When you have implemented the new controls (if any) update the risk assessment to take these into account.

**SUMMARY OF HAZARDOUS SOURCES AND RISKS
THEY CREATE IN EDUCATION ESTABLISHMENTS**

Source of hazard		Main risks
1.	Chemicals and other hazardous substances (solvents, radiation, paints, asbestos, etc)	Irritant, harmful or toxic effects such as liver, kidney or lung damage, skin disease such as dermatitis
2.	Noise eg: in craft workshops, boiler rooms	Hearing loss, voice damage, stress or distraction. Inability to hear alarms, etc
3.	Moving machinery or equipment	From cuts to loss of limbs or asphyxiation if clothing becomes entangled
4.	Electricity	Electric shock or burns/systems failure
5.	Gas – systems and appliances (include eg: chlorine gas/swimming pools	Fire, explosion, carbon monoxide, asphyxiation from inert gases
6.	Personal protective equipment	Poor fit, lack of training, design failures/unsuitability
7.	Transport/vehicles	Traffic accidents, equipment damage, exhaust fumes, fatalities
8.	Fire	Fire, smoke, panic, asbestos release, equipment/systems failure
9.	Manual handling	Back strain and other musculo-skeletal problems
10.	Emergency instructions/signs	Incorrect or poorly positioned/not understood
11.	Thermal conditions and ventilation	Heat stress, hypothermia, discomfort
12.	Uncontrolled outside contractor's work	Fumes, sparks, electrical failure
13.	Confined spaces, eg: lifts, boilers, manholes	Asphyxia, poisoning, likely fatal
14.	Access/egress	Escape routes, intruder prevention
15.	DSE/computers and work stations	Upper limb disorders, discomfort, stress
16.	Ladders, eg: roof work/window cleaning	Falls of people or equipment
17.	Lighting	Eye strain, discomfort
18.	Long hours of work/excessive overtime	Stress and fatigue leading to mistakes and increased illness
19.	Play areas/sports hazards	Equipment failure, unsupervised, vandalism
20.	Alcohol, drugs, smoking and other substance abuse	Behavioural changes and conflict/aggression
21.	Poor security measures and lone working	Accident without assistance/security failures/possible attack
22.	Young persons/children – additionally vulnerable	Require additional and specific attention to safety
23.	Work equipment	Hazards to staff and visitors
24.	Waste materials/ refuse disposal	Contamination of air or water or land
25.	Other Environmental issues, eg: (i) disposal of waste chemicals, gases etc (ii) recycling, eg: litter, phone masts	Major pollution incident or harm to public Slip accidents, radiation

RISK ASSESSMENT WORKSHEET (1)

Location/Facility:		
Telephone:		
Date:		
Number of people in area (employees/pupils/visitors):		
Hazard Details:		
What is it?		
Where is it?		
Who is affected?		
<i>Assessment Date:</i> <i>Assessed By:</i> <i>Job Title:</i> <i>Re-Assess Date:</i>	probability x severity = risk	
Action/Further Controls Required/Remedial Works/Improvements:		
[NB use continuation sheet if required]		
Other information:		
Evaluate new controls		
How are they working		
Any further improvements needed:	Details:	
Works completed on:		
Signed off:	Position:	Date:

RISK ASSESSMENT WORKSHEET (2)

Assessment Details			
Hazard Area and Reference Number:			
Reason for Assessment:			
Person Exposed:			
Hazard Description			
Hazard Category(yes)		Risk Groups	
Severity	Frequency	Likelihood	
Existing Controls			
Further Controls Required		Deadline	
Other information			
Assessor's Name:		Date:	
Job Title:		Review Date:	
Signature:		Date Completed:	

RISK ASSESSMENT WORKSHEET (3)

Machines/Systems of Work or Operations Covered by Risk Assessment:				
Persons Exposed:	Who		Nos:	
Hazards:				
Risk Evaluation	Severity:	5 – Major []	3 – Serious []	1 – Minor []
	Likelihood:	5 – High []	3 – Medium []	1 – Low []
Severity []		X	Likelihood []	=
			Risk-Rating []	Priority Rating Score
				Urgent 20 - 25
				High 10 - 20
				Medium 5 - 10
				Low 1 - 5
Existing Controls:				
Further Controls Required:				
Signature:			Date:	
Position:				

A TYPICAL FORM THAT CAN BE USED FOR JOB SAFETY ANALYSIS:

Job Safety Analysis Worksheet (4)

Location/Facility:	Page	of
Assessment conducted by:	Date	
Job Title:		
Responsible to:		
Location Supervisor:	Work area (include sketch plan if necessary):	
Workplace:	Sub-work area:	
Operations/Task Name:		
Employee Name:	Frequency of task:	
Duration:		
Description:		
Hazardous Agent(s):		
<p>Consider:</p> <ol style="list-style-type: none"> 1) Does the job have to be done at all? 2) Substitute work method available? 3) What steps can be put in to reduce the hazard? 4) PPE required? (consider as last method of control if others not suitable) 		
<p>Job Risk Rating:</p> <p><input type="checkbox"/> (1) Cease practice immediately. Do not restart job until all safety restraints are put in place</p> <p><input type="checkbox"/> (2) Proceed with caution/introduce improvements as soon as possible.</p> <p><input type="checkbox"/> (3) Job safe to proceed with as current.</p>		
Follow-Up Action/Referred to:		
Completed on (date):		
Copies to:		
Signature:	Date:	

ALTERNATIVE SCORING SYSTEM OF RISK ASSESSMENT

Likelihood of Occurrence	Hazard Severity Index				
	5	4	3	2	1
Very Likely (5)	25	20	15	10	5
Likely (4)	20	16	12	8	4
Quite Possible (3)	15	12	9	6	3
Possible (2)	10	8	6	4	2
Not Likely (1)	5	4	3	2	1

Severity index:
 1 = minor injury
 2 = significant injury
 3 = major injury
 4 = serious injury/death
 5 = multiple deaths

Scale of 1 - 25

High Risk
Medium Risk
Low Risk

SUMMARY OF COMPLETED ASSESSMENT (5)

Risk Assessment Summary compiled by:		Ref No:
Location:	Department/Work Group:	
Assessment for:		
Significant risks:		
Persons exposed to specified risks:		
Item	Details of Precautions	
Documents, Procedures, etc	Please refer to the following, in addition to the Health and Safety Policy:	
Information	Staff have been advised of the key risks identified above.	
Instruction	Staff have been provided with instructions as to their working procedures.	
Training	The following formal training has been provided:	
Supervision	Staff engaged in this work are supervised as follows:	
Access	Arrangements for access are:	
Environment	The general working environment is maintained as follows:	

(1)

Item	Details of Precautions
Equipment	<p>Equipment used in the work is:</p> <p>The equipment is maintained in a safe condition by:</p>
Hazardous substances	<p>The following hazardous substances are in use and assessments have been made detailing working precautions:</p>
Work Practices	<p>The following represent controls to protect against specified risks: eg: manual handling, permits to work</p>
Workstations	<p>The workstations used by staff have been subject to a specific assessment; records are kept for each workstation at:</p>
PPE	<p>The following Personal Protective Equipment has been issued to staff:</p>
Emergencies	<p>Fire and other emergency procedures are as follows:</p>
Other issues	
<p>The controls have been selected to protect the health and safety of staff and others who may be affected by the work. They are designed to protect against risks identified in the Risk Assessment.</p>	
Signed:	Date:
Position:	

(2)

FURTHER READING

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