NEBOSH International Diploma

Unit DI1: Workplace health and safety principles

SAMPLE MATERIAL

FIFTH EDITION

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outcomes from the process to determine if the control measures are appropriate to the risks. The procedure should specify the frequency and circumstances when the risk assessment programme is audited and reviewed.

Acceptability / tolerability of risk

ACCEPTABILITY OF RISK

There is risk in all parts of life and everyday risks are generally acceptable. The risk of an individual tripping over their feet as they walk along an obstacle-free surface would be acceptable. Acceptability of risk relates to societal, individual, organisational and regulatory acceptability. Essentially risks that are acceptable are ones where no additional controls to reduce the risk are considered necessary. It is necessary for the organisation and regulators to determine the acceptability of risk when deciding an organisation's compliance with legislation.

Where the duty in law is qualified by 'so far as is reasonably practicable (SFAIRP)', the acceptability of risk will depend on the level of risk. The higher the risk the less acceptable it is. Of particular importance in the interpretation of SFAIRP is the UK civil law case of Edwards v The National Coal Board (1949). This case established that a computation must be made in which the quantum of risk is placed on one scale and the sacrifice, whether in money, time or trouble, involved in the measures necessary to avert the risk, is placed in the other. If it can be shown that there is a ***gross disproportion*** between them, the risk being insignificant in relation to the sacrifice, the person upon whom the duty is laid discharges the burden of proving that compliance was not reasonably practicable.

"In seeking to apply this case law, when regulating or producing guidance on compliance with duties qualified by all injunctions embodying the concept of 'reasonable practicability' such as SFAIRP, ALARP (as low as reasonably practicable), ALARA (as low as reasonably achievable), HSE believes that such duties have not been complied with if the regime introduced by duty holders to control risks fails the above 'gross disproportion' test."

Figure 4-21: Application of 'reasonably practicable'. *Source: UK, HSE, Reducing risks, protecting people (R2P2).*

Organisations may set their own levels of acceptable risk using, for example, a risk rating method. If on a scale of 1 to 25, the risk rating up to category 8 may be deemed by the organisation to be acceptable. However, this c be seen as an oversimplification, as the concept of SFAIRP includes the fact that if additional action can easily be taken by the organisation, and it would reduce the risk rating further, then this must be done.

In the UK, the HSE consider acceptable, tolerable and unacceptable (intolerable) risk in their framework approach, 'Tolerability of Risk' (TOR). This is depicted by the following diagram, which shows that there is a graduation between these three conditions and that where the risk lies on the graduation depends on the perspective of the person considering it.

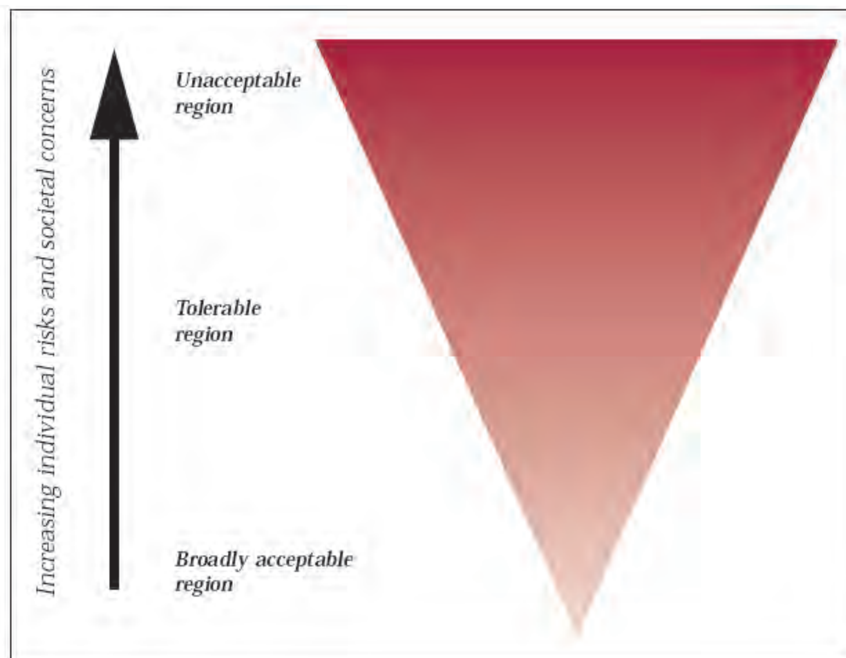

Figure 4-22: Framework for tolerability of risk. *Source: UK, HSE, Reducing risks, protecting people (R2P2).*

"Getting it right depends to a large extent on the criteria adopted for deciding whether a risk is unacceptable, tolerable or broadly acceptable. It is, therefore, not surprising that a lot of effort has been spent in developing such criteria."

Figure 4-23: Deciding tolerability. *Source: UK, HSE, Reducing risks, protecting people (R2P2).*

The UK HSE, in the document 'Reducing risks, protecting people' explain the three main criteria it uses when considering tolerability. An equity-based criterion starts with the premise that all individuals have unconditional rights to certain levels of protection. This leads to standards, applicable to all, held to be usually acceptable in

- Positive indicators are dominant so completing training, undertaking audits, making suggestions are all recognised, valued and supported.
- New initiatives are likely to come from the workforce and are therefore more likely to get their co-operation when they are introduced.
- Health and safety communication is normal and routine, for example discussing the ‘thought of the day’.
- Workers are trusted and invited to think through problems and discuss them with the team.
- The procedures that are in place will have been developed in consultation with workers looking at the “work as done”, therefore they are much more likely to fit the actual circumstances of the work.
- Because proactive thinking plans improvements rather than reacting to negative outcomes, it means that initiatives are planned and resources made available.
- Investigation of incidents that occur are not used as a blame seeking exercise, but as an opportunity to determine what did go right and where adjustments can be made to strengthen what goes right in the future.

2.6 - Risk perception

Cross reference with element 4.2 – risk management

Perception is often defined as ***“the process by which people interpret information that they take in through their senses”.*** There are multiple factors that mean two people perceive the world around them very differently and then come to different judgements about hazards and their associated risks. For our perceptive systems to detect a stimulus we must have effective senses.

Human sensory receptors and their reaction to stimuli, sensory defects and basic screening techniques

The main sensory receptors are the eyes, ears, taste, nose and skin (giving the sense of sight, hearing, taste, smell and touch). All of the of sensory receptors have a common structure, they consist of cells designed specifically to detect some aspect of the individual’s surrounding environment (receptor cells), a series of neurons (nerve cells) that transmit the perceived information to the brain and a specific segment of the brain for receiving and analysing the information. Receptor cells can be classified according to the kind of stimuli to which they respond. Chemoreceptors, for example, are cells that detect certain kinds of chemical substances, for example, receptor cells in the nose and mouth. Photoreceptors detect the presence of light and are present in the eye. Mechanoreceptors detect changes in mechanical energy, for example, those that occur during touch and hearing.

EYES

Reaction to stimuli of the eyes

The eyes are the most significant sensory receptor, receiving 70% of information, which enable us to:

- See a light at long distance in the dark - the light from a match up to 8 kilometres away (5 miles).
- In daylight to take account of movement in our extreme peripheral vision.
- To observe detail to 25 microns (one thousandth of an inch).
- To differentiate the seven colours of the rainbow (visible spectrum) in many shades and hues.
- Position items accurately using the binocular vision provided by two eyes.

Sensory defects of eyes

Common eye defects include short sightedness (myopia), where an individual is unable to differentiate detail at a distance because instead of light focusing on the retina it focuses in front of the retina.

Another defect related to the focusing of the eye is long sightedness, where the individual is unable to see items clearly close to the eye or see fine detail because the light received by the eye is focused behind the retina. This may be a hereditary abnormality of the eye or a natural part of the aging process (called presbyopia).

Another common eye defect is colour vision deficiency, which is the lack of ability to differentiate between colours, for example red and green. The retina contains light sensitive cells called cones; there are three types - red, green and blue.

Colour vision deficiency occurs when one or more of the cone types are faulty or missing, most people affected cannot distinguish some shades of red and green.

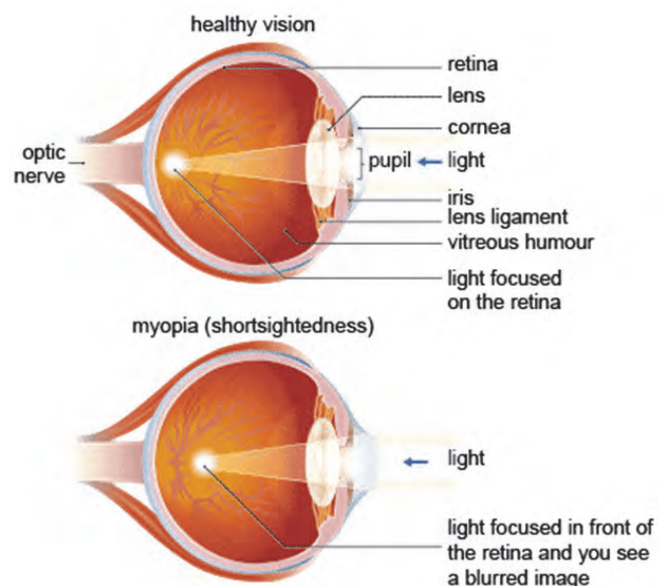

Figure 2-36: Short sightedness. *Source: BUPA.*

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LEVEL FIVE: CONTINUAL IMPROVEMENT

At level five the prevention of all injuries or harm to workers (both at work and at home) is a core value of the organisation. The organisation has had a sustained period (years) without a significant injury or high potential incident, but there is no feeling of complacency. The organisation uses a range of indicators to monitor performance and is constantly striving to be better, including finding ways of improving hazard control mechanisms. All workers share the belief that health and safety is a critical aspect of their job and accept that the prevention of non-work injuries is important. The organisation invests considerable effort in promoting health and safety outside work.

The health and safety maturity model has been subsequently further developed and adapted by The Keil Centre to reflect current language and thinking as shown in the following diagram.

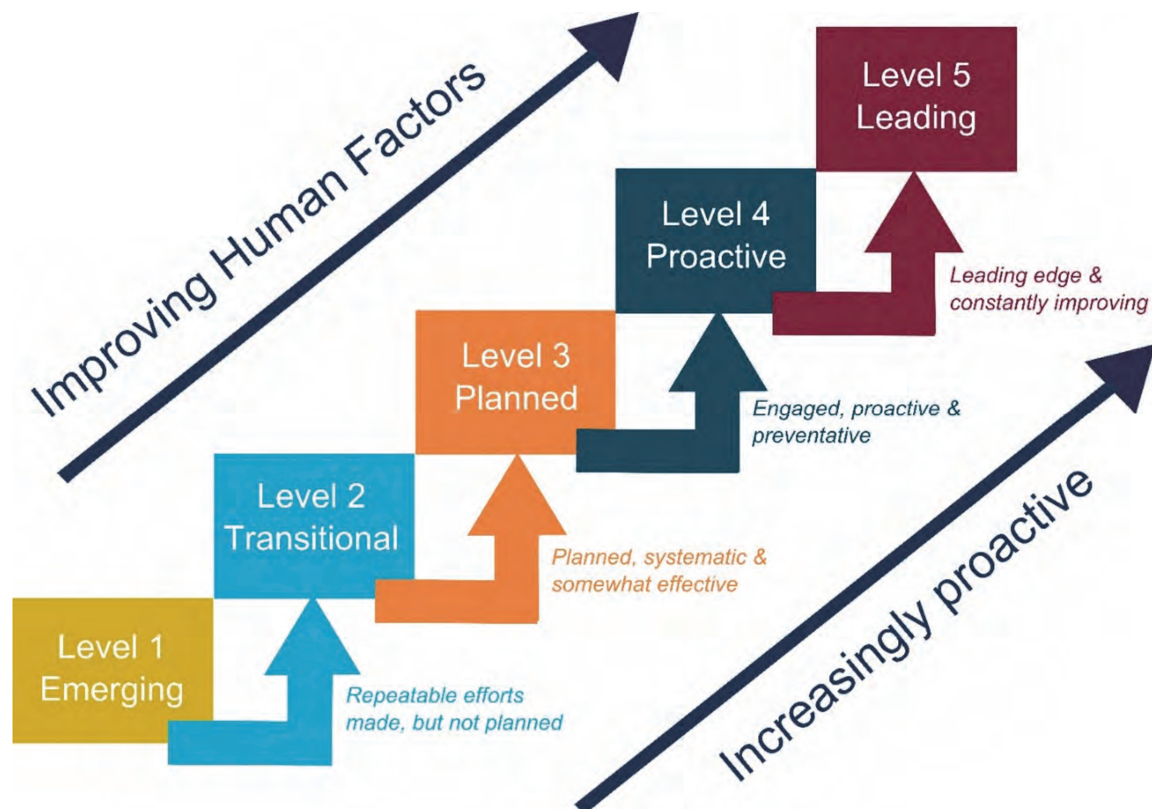

Figure 2-29: Human Factors Maturity® model (adapted). *Source: The Keil Centre.*

Concepts of blame, no-blame and just culture (Dekker)

Some behavioural models of health and safety assume human actions or omissions are the cause of incidents -- if something went wrong, someone must be to blame. For example, the operator hit the wrong button and a colleague was electrocuted – the operator was to blame. Punishing the operator means there is no need to investigate further. This way of thinking is called ***'a blame culture'***. However, reliance on a blame culture to improve health and safety is problematic. Reason stated "For the most part, punishing people does not eliminate the systemic causes of their unsafe acts. Indeed, by isolating individual actions from their local context, it can impede their discovery." Ultimately, where a blame culture prevails, incidents do not get reported and root causes are never identified.

In the 1990s some organisations promoted the idea of ***'a no blame culture'***, where no individual would be blamed for their mistakes. It was felt that this would encourage reporting and help identify the root causes. However, this approach can result in a lack of accountability a lack of understanding as to where the line between acceptable and unacceptable behaviour has been drawn. Just as a blame culture prevents anyone learning from events, so a no-blame culture can imply that, since no one is at fault, nothing needs to change.

Various attempts have been made to investigate incidents and decide where responsibility actually lies, often called ***'a just culture'***. These attempts seek to distinguish between reckless acts of individuals and system-induced violations and errors. Ultimately a line is drawn, events one side of the line can be focussed on the role of the individual and events on the other side focus on the organisation. Sidney Dekker, in his book Just Culture, suggests that drawing the line is difficult, since where the line should be drawn is "infinitely negotiable". He writes: "As a result there really is no line, there are only people who draw it. Who draws the line depends on where the power is held?"

Reason producing a decision tree for determining the culpability of unsafe acts in order to help organisations find the "just" line, between blame and no blame. He asked questions to distinguish between sabotage (intended actions and consequences), reckless acts (intended actions and unintended consequences), system-induced

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Article 20 of Convention C155

Article 20 emphasises the requirement that employers must ensure that the co-operation of managers and workers is an integral part of the measures taken to meet Articles 16 to 19, ***see figure ref 1-35***. For example, the employer should ensure co-operation between managers and workers when establishing health and safety measures for work equipment, such as the suitability of machine guards. In this way management and workers are more likely to support the measures selected.

"Co-operation between management and workers and/or their representatives within the undertaking shall be an essential element of organisational and other measures taken in pursuance of Articles 16 to 19 of this Convention."

Figure 1-35: Convention requirements for co-operation. *Source: ILO, Occupational Safety and Health Convention C155, Article 20.*

Paragraph 12 of Recommendation provides important clarification on how co-operation should be established and refers to health and safety delegates and committees. Importantly, it also defines what worker representatives should be consulted on and how they should be treated when carrying out their function of representing workers.

Paragraph 12 of Recommendation R164

Paragraph 12 of ILO Recommendation R164 provides guidance on co-operation, ***see figure ref 1-36***.

"(1) The measures taken to facilitate the co-operation referred to in Article 20 of the Convention should include, where appropriate and necessary, the appointment, in accordance with national practice, of workers' safety delegates, of workers' safety and health committees, and/or of joint safety and health committees; in joint safety and health committees workers should have at least equal representation with employers' representatives.

(2) Workers' safety delegates, workers' safety and health committees, and joint safety and health committees or, as appropriate, other workers' representatives should:

(a) Be given adequate information on safety and health matters, enabled to examine factors affecting safety and health, and encouraged to propose measures on the subject.

(b) Be consulted when major new safety and health measures are envisaged and before they are carried out, and seek to obtain the support of the workers for such measures.

(c) Be consulted in planning alterations of work processes, work content or organisation of work, which may have safety or health implications for the workers.

(d) Be given protection from dismissal and other measures prejudicial to them while exercising their functions in the field of occupational safety and health as workers' representatives or as members of safety and health committees.

(e) Be able to contribute to the decision-making process at the level of the undertaking regarding matters of safety and health.

(f) Have access to all parts of the workplace and be able to communicate with the workers on safety and health matters during working hours at the workplace.

(g) Be free to contact labour inspectors.

(h) Be able to contribute to negotiations in the undertaking on occupational safety and health matters.

(i) Have reasonable time during paid working hours to exercise their safety and health functions and to receive training related to these functions.

(j) Have recourse to specialists to advise on particular safety and health problems."

Figure 1-36: Guidance on cooperation. *Source: ILO, Occupational Safety and Health Recommendation R164, Paragraph 12.*

Article 21 of Convention C155

Article 21 reflects current good practice that employers are responsible for the risks they create and must bear the cost of measures to deal with them. This article requires that health and safety measures must be provided without cost to workers.

Paragraph 13 of Recommendation R164

Paragraph 13 of Recommendation R164 emphasises the employer's responsibility to ensure the availability of occupational health and safety services and advice, ***see figure ref 1-37***.

"As necessary in regard to the activities of the undertaking and practicable in regard to size, provision should be made for:

(a) The availability of an occupational health service and a safety service, within the undertaking, jointly with other undertakings, or under arrangements with an outside body.

(b) Recourse to specialists to advise on particular occupational safety or health problems or supervise the application of measures to meet them."

Figure 1-37: Appointment of competent persons. *Source: ILO, Occupational Safety and Health Recommendation R164, Paragraph 13.*

Level of sickness absence

The level of sickness absence and incapacity can influence societal expectations in situations where the levels become significant. This is particularly the case where society, in the form of the state, bears the cost of this absence or dealing with the incapacity. These incapacities and absences can be long lasting and can cumulatively affect a large number of people. Organisations, and in turn governments, are conscious of the cost of absence, particularly of highly skilled workers.

Where neither organisations nor the state provides support, the effect of this on individuals and their families becomes a moral influence on society and can result in demands by the public for improvements. Studies conducted by the World Health Organization (WHO) show that there is a macroeconomic impact of disease and injury that leads to absence and incapacity.

For example, sickness absence may cause the family of the sick person to reduce their spending on goods and services, which in turn reduces the amount of tax on purchases collected by the government. Because of the effects of interdependency priorities related to health and safety may be brought forward and standards actively improved to reduce the effects.

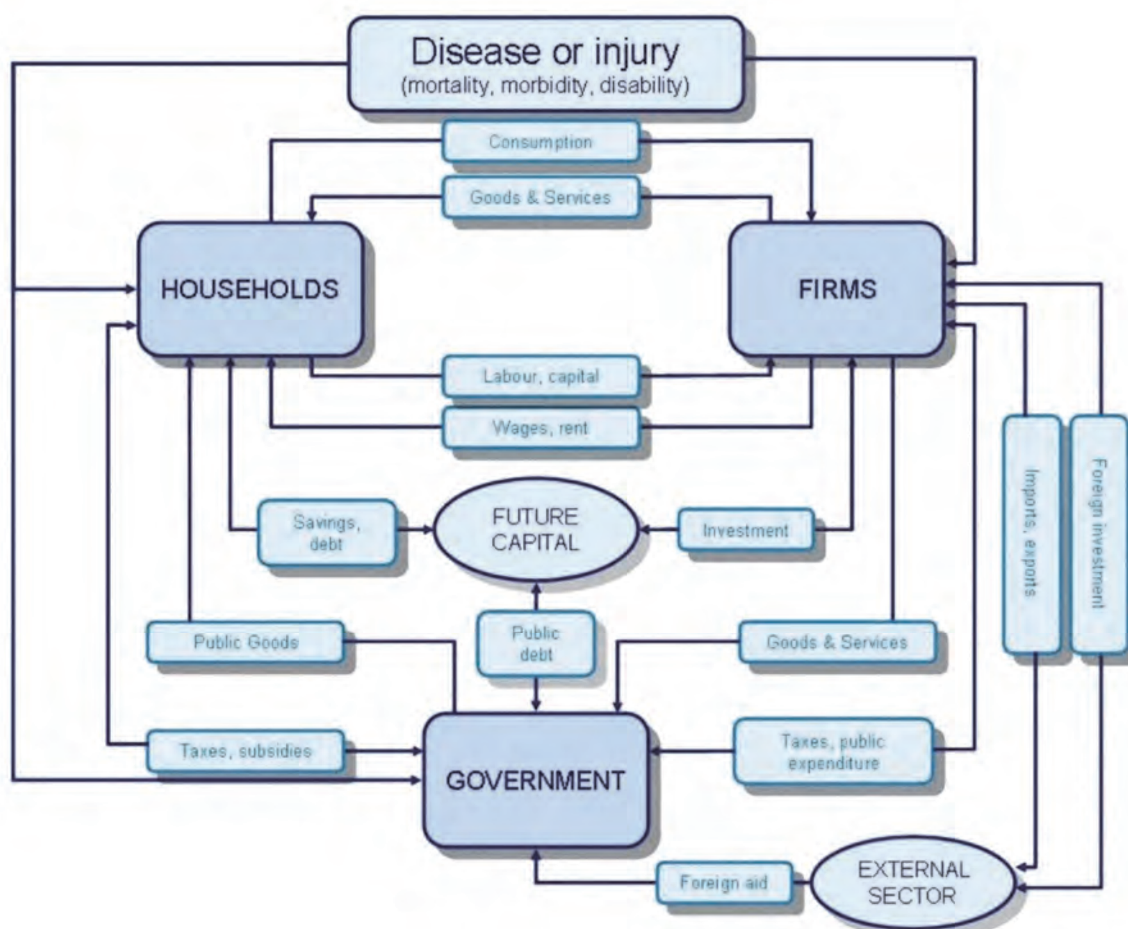

Figure 7-7: Macroeconomic impact of disease and injury. *Source: WHO, Economic Impact Guide.*

COVID 19

Disruption to the economy at the beginning of 2020 due to the emergence of COVID-19 as a national health issue had the potential to impact on workplace injury and work-related ill health data for the 2019/20 period. Analysis of the data from the Labour Force Survey and RIDDOR found that COVID-19 does not appear to be the main driver of changes seen in the data from this period. However, as the period is from April 2019 to March 2020 the influence of COVID-19 may affect the following periods more significantly.

Incapacity

A person is considered to have a disability if they have a physical or mental impairment that has ‘substantial’ and ‘long-term’ negative effects on their ability to do normal daily activities.

In line with the societal expectations discussed below, businesses have a responsibility to help all workers and potential workers to be able to carry out work by making reasonable adjustments and ensure they are not disadvantaged by their disability. In the UK, the government initiative Access to Work is a benefit system designed to help individuals to start or stay in work. As well as providing financial support the benefits extend to the provision of other support mechanisms and advice which may be necessary to help individuals stay in work. Although designed to help workers making a claim, there are also benefits for employers. The financial payments

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Even when they have been trained, young people may need more supervision to make sure that they do not act irresponsibly or take short cuts which put themselves and others at risk.

Vulnerable people

There are people at work who are especially vulnerable and will need care and supervision in the workplace. A vulnerable adult is someone aged over 18 who may have special needs due to a mental or physical disability, an addiction or a learning difficulty. This covers disabled people, people with mental illness and those with a wide variety of conditions such as autism and Down's syndrome. This vulnerability may mean that the person requires a specific training scheme that is tailored to their vulnerability.

Under equality law, there is a duty to make reasonable adjustments for disabled workers. The aim of the duty is to make sure that, as far as is reasonable, a disabled worker has the same access to everything that is involved in doing and keeping a job as a non-disabled person. This duty would extend to and include training provisions.

In this way, they learn to use equipment and carry out activities that are within their capability without putting themselves and others at risk.

NEED FOR TRAINING TO BE CARRIED OUT UPWARDS IN THE ORGANISATION

Directors and senior managers have a responsibility to ensure health and safety duties placed on their organisations are met. Members of the board and the senior managers have both collective and individual responsibility for ensuring health and safety and can be personally liable when these duties are breached. Providing health and safety training can promote understanding and knowledge of the main health and safety issues affecting their organisation. It will also help them to formulate a strategy and implement arrangements to manage the health and safety risks. Training will help them to become involved in health and safety matters, ask appropriate questions and contribute to decisions that affect health and safety.

In practice, the responsibilities of directors and senior managers will include ensuring a suitable management system is established and maintained. This will require the directors and senior managers to establish an appropriate health and safety policy, measurable health and safety objectives and programmes to meet the objectives. Their responsibilities will also include ensuring risk assessments have been carried out, management arrangements are made, and control measures are in place and used. In addition, they will usually have a responsibility to lead by example and participate in health and safety leadership activities like visits to the workplace. Without training that explains the value of these processes and how to carry them out they are more likely to be ineffective.

Relationship between competence and supervision

Supervision consists of the provision/reinforcement of performance standards of workers to ensure health and safety. It includes monitoring that agreed work practices are followed and the use of motivation techniques such as involvement of the workforce in task design to help ensure compliance with the required actions. It is important to balance the amount of supervision against the work being done and the competence of the individual. It is generally appropriate that the level of supervision necessary increases with the level of risk related to the work.

When considering supervision of individuals, it is important to take account of the competence of the individual, because there is a relationship between the level of competence an individual has and the level of supervision they will require. The relationship is shown graphically in ***Figure 3-6***.

In cases where an individual has qualifications, but no experience, and is therefore low in competence supervision must increase accordingly. For example, a young person straight from full-time education would usually need a higher level of external/imposed supervision than an individual with more competence. As workers develop competence the level of external/imposed supervision, provided by a supervisor, can be reduced and the acceptance of the level of self-supervision, provided by the worker, can be increased.

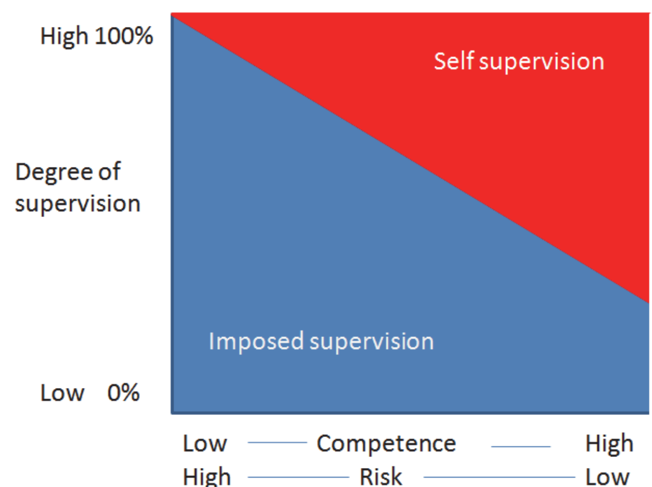

Figure 3-6: Competence v supervision. *Source: RMS.*

When individuals have a high level of competence and risks related to their work are low, they do not require imposed supervision, but operate with self-supervision.

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