NEBOSH International Diploma

Unit DI2: Workplace health issues

SAMPLE MATERIAL

RMS PUBLISHING

FIFTH EDITION

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One of the barriers to successful return to work can be the worker's negative perception about their illness, 'work will make their health worse'. In addition, they may have social barriers, for example, lack of child care, looking after elderly relatives and the job demands itself. Addressing these barriers is an important aspect of any rehabilitation programme, if it is to be successful. Organisations must support workplace interventions, and ensure they are tailored to support a safe and healthy return to work for the worker. It is the role of the occupational health function to monitor that this takes place and ensure that intervention to overcome barriers to work is effective.

What needs to be considered in a risk assessment prior to return to work

It is important that the worker's first day back after extended absence is a positive experience for them. Returning to work after this time may be seen by the worker as a challenging experience and an informal visit before the return date may enable them to adjust, catch up with changes and re-orientate themselves to the workplace.

In addition to conducting a return-to-work interview, when the worker returns it is important that someone welcomes them back, eases their induction to the workplace and any adjustments that may have been made for their benefit. Fellow workers should be encouraged to make the return to work a positive, welcoming and encouraging experience. This may present challenges where it may be perceived that the worker returning to work is not likely to contribute fully to the workload, reduce bonuses and receive favourable treatment in the form of shorter hours. The negative feelings of the fellow workers can be reduced by explaining the return-to-work plan to them and encouraging a positive outlook.

The main findings of a CIPD absence survey conducted in 2012 included:

- The most commonly used approach to managing short-term absence was return to work interviews (65% of organisations), followed by trigger systems to review attendance (58%), and the provision of sickness absence information to line managers (20%) and the use of disciplinary procedures (27%).
- Return to work interviews were the most commonly used approach to managing long-term absence (85% of organisations), followed by risk assessments following return to work (75%), worker absence information for line managers (76%) and use of occupational health services (80%).

The involvement of occupational health professionals was rated the most effective approach for managing long-term absence by all the main employer sectors.

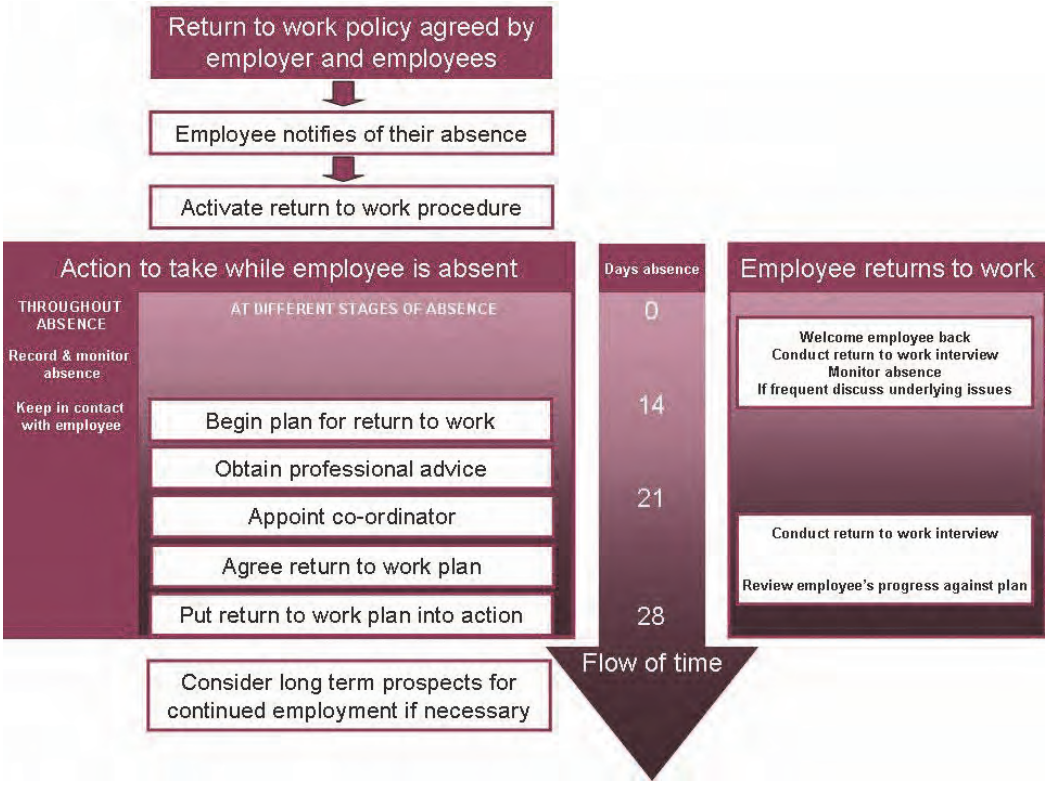

Figure 1-6: Managing sickness absence and return to work. *Source: UK, HSE, HSG249/RMS.*

Liaison with other disciplines in assessing and managing fitness for work

EXISTING HEALTH PROBLEMS

Many jobs do not require specific fitness standards and could be classed as low risk, for example, some office workers, and it may only be necessary to ask the worker to complete a basic health questionnaire that requires a declaration regarding their physical and mental health. The completion of this declaration may be organised by a Human Resources department and the results evaluated by an occupational nurse or doctor. For existing

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6) Fatigue reporting system for workers – to enable workers to inform management if they are fatigued when presenting themselves for work or become fatigued during work.
7) Fatigue incident investigation.
8) A process for the auditing of the management of fatigue that delivers corrective actions through a continuous improvement process.

3.2 – Health surveillance

Elements of the British HSE's health surveillance cycle

The diagram in ***figure ref 3-3*** provides an overview of the health surveillance cycle. Employers have a central role in every aspect of the cycle, but the involvement of workers is essential to ensure it is effective.

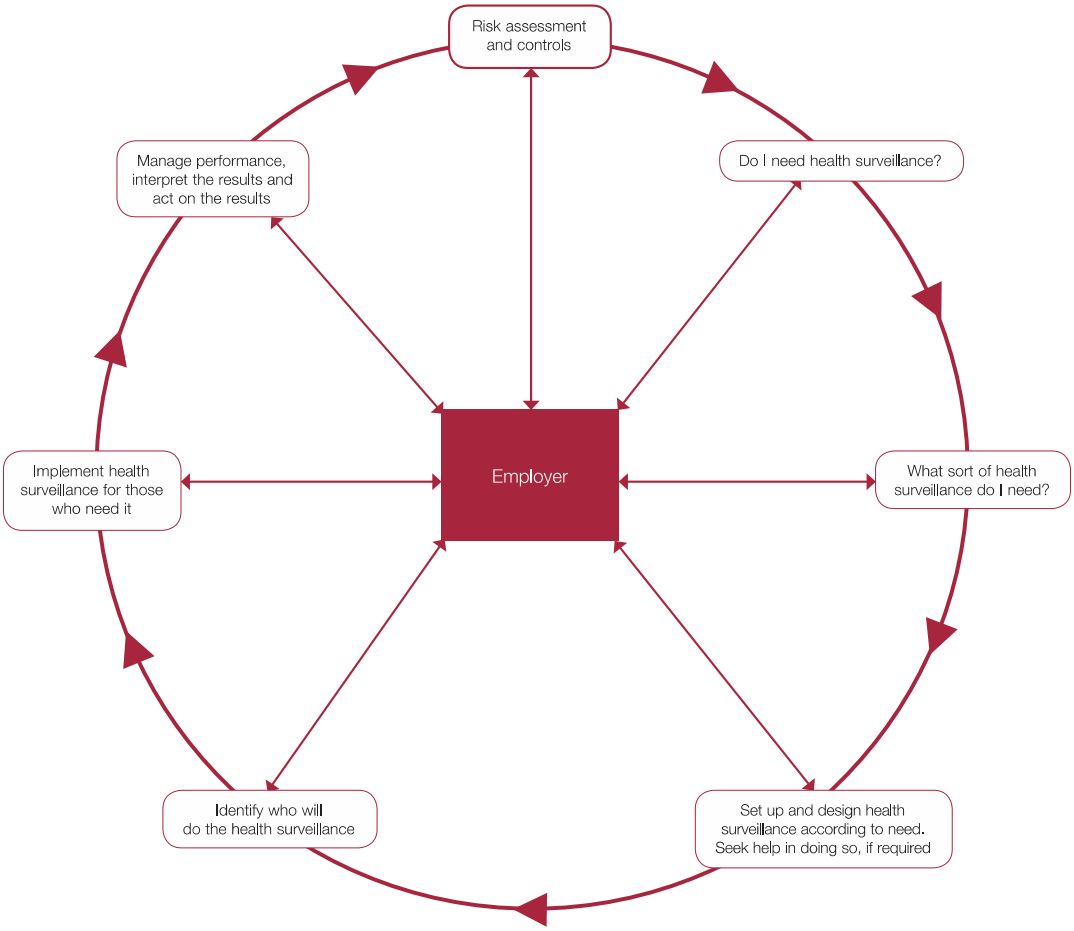

Figure 3-3: Health surveillance cycle. *Source: UK, HSE, http://www.hse.gov.uk/health-surveillance/assets/documents/health-surveillance-cycle.pdf.*

STAGE 1 - DO A RISK ASSESSMENT AND APPLY APPROPRIATE CONTROL MEASURES

A risk assessment will provide information on what could harm workers' health and enable appropriate control measures to be put in place to manage the risks.

Control measures may not always be reliable, despite appropriate checking and maintenance, therefore health surveillance could help to ensure ill health effects are detected as early as possible.

STAGE 2 - DO I NEED A HEALTH SURVEILLANCE

A risk assessment will help employers decide if they need health surveillance. Issues that can indicate whether health surveillance might be appropriate include:

- Previous cases of work-related ill health in the workplace.
- Industry sector evidence of ill health in relevant jobs.
- Reliance on personal protective equipment (PPE) as a health hazard exposure control measure, because it is often not managed effectively.

Regulation 6 of the UK Management of Health and Safety at Work Regulations (MHSWR) 1999 sets out a general duty with regard to the provision of health surveillance:

> "Every employer shall ensure that his employees are provided with such health surveillance as is appropriate having regard to the risks to their health and safety which are identified by the assessment".

Figure 3-2: Duty to conduct health surveillance. *Source: UK MHSWR 1999, Reg 6.*

Skin sensitisation - Annex 1 of GHS			
	Category 1	Category 1A	Category 1B
Pictogram			
Signal word	Warning	Warning	Warning
Hazard statement	May cause an allergic skin reaction	May cause an allergic skin reaction	May cause an allergic skin reaction

As with respiratory sensitisers the three categories for skin sensitisers relate to the type and level of evidence that identifies the substance as a sensitiser. Category 1 substances are ones where there is strong documented evidence of causing allergic contact dermatitis. Nickel and epoxy resins are examples of skin sensitisers.

GERM CELL MUTAGENICITY

'This hazard class is primarily concerned with chemicals that may cause mutations in germ cells of humans that can be transmitted to the progeny (future generations, i.e. children). A mutation is defined as a permanent change in the amount of the genetic material in a cell.'

Germ cell mutagenicity - Annex 1 of GHS			
	Category 1A	Category 1B	Category 2
Pictogram			
Signal word	Danger	Danger	Warning
Hazard statement	May cause genetic defects	May cause genetic defects	Suspected of causing genetic defects

The different categories of mutagenicity reflect the degree of knowledge about the chemical and the indications that it may cause mutagenicity. Category 1 substances are known or are presumed, because of related evidence, to cause an inherited mutation. Whereas category 2 substances are ones where there is concern that they may induce heritable mutations. If a specific route of exposure is proven to be the only route causing harm, this route must be stated in the hazard statement.

CARCINOGENICITY

'The term carcinogen denotes a substance or mixture that induces cancer or increases its incidence. Substances and mixtures that have induced benign and malignant tumours in well performed experimental studies on animals are considered also to be presumed or suspected human carcinogens unless there is strong evidence that the mechanism of tumour formulation is not relevant to humans.'

Carcinogenicity - Annex 1 of GHS			
	Category 1A	Category 1B	Category 2
Pictogram			
Signal word	Danger	Danger	Warning
Hazard statement	May cause cancer	May cause cancer	Suspected of causing cancer

As with the different categories of mutagenicity, the categories for carcinogenicity reflect the degree of knowledge about the chemical and the indications that it may cause cancer.

Category 1 substances are known, or are presumed, because of related evidence, to induce cancer. Whereas category 2 substances are ones where there is concern that they may induce cancer. If a specific route of exposure is proven to be the only route causing harm, this route must be stated in the hazard statement. Benzyl

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7.1 – Asbestos

Identification of types of asbestos

Asbestos is a fibrous mineral extracted from the ground and mined throughout the world. 'Asbestos' is a general (generic) term for a group of fibrous minerals (known as silicates). There are three main types of asbestos:

1) Chrysotile - 'white'.
2) Amosite - 'brown'.
3) Crocidolite - 'blue'.

The colours are of the mineral when mined. In the workplace the asbestos types ***cannot*** be identified just by their colour - laboratory analysis is required.

SERPENTINE FIBRE

Chrysotile - 'white' asbestos - typically found in cement products, floor tiles and gaskets. By far the most common type of asbestos.

AMPHIBOLES FIBRE

Amosite - 'brown' asbestos - typically found in wall panels, ceiling tiles and industrial (land and sea) boiler and pipe insulation.

Crocidolite - 'blue' asbestos - typically found in sprayed coatings (limpet), insulation industrial steam boiler systems and old textiles.

Asbestos is made up of tiny sharp fibres that remain in the air easily. Fibres enter the body through the nose, mouth and skin. Fibres are easily inhaled and are difficult to breathe out because of their tiny sharp fibres. They may also be swallowed and affect the digestive system or may penetrate the skin.

Figure 7-1: Chrysotile 'white' asbestos. *Source: forhealths.com.*

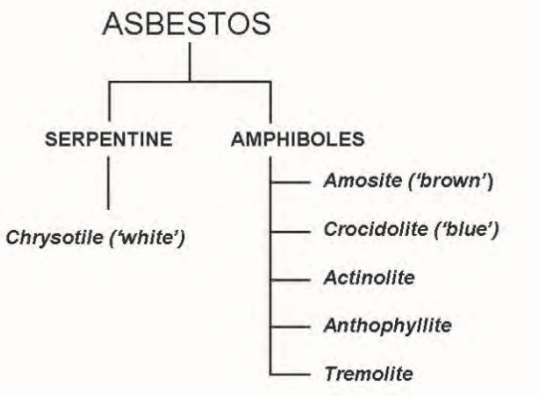

Figure 7-2: Two groups of asbestos types. *Source: RMS.*

Typical locations where asbestos can be found

Asbestos has been widely used in building materials for a long time, though some countries have established programmes to phase out its use because of the risks to health. As long as the asbestos-containing material (ACM) is in good condition, and is not being or going to be disturbed or damaged, there is negligible risk. But if it is disturbed or damaged, it can become a danger to health, because people may breathe in any asbestos fibres released into the air.

Workers who may be particularly at risk of being exposed to asbestos when carrying out building maintenance and repair jobs include:

- Construction and demolition contractors, roofers, electricians, painters.
- Decorators, joiners, plumbers, gas fitters, plasterers, shop fitters, heating and ventilation engineers, and surveyors.
- Anyone dealing with electronics, for example, phone and information technology (IT) engineers, and alarm installers.
- General maintenance engineers and others who work on the fabric of a building.

If asbestos is present that can be readily disturbed, is in poor condition and not managed properly, all people in the building could be put at risk. Asbestos has been used in many parts of buildings, examples of uses and locations where asbestos can be found are shown in ***figure ref 7-3***.

Atmosphere/substance related issues

Consideration of likely oxygen deficiency (BA vs Respirator)

There are a number of issues to consider in the selection of respiratory protective equipment, not least the advantages and limitations of respirators and breathing apparatus shown above. It is essential to understand the difference between a respirator and breathing apparatus. If work is to be carried out in an oxygen deficient atmosphere breathing apparatus must be used rather than a respirator as the breathing apparatus will provide an independent supply of breathable air, with an appropriate amount of oxygen, whereas a respirator provides no additional oxygen and is limited to filtering the air breathed by the wearer.

Level of protection required (significance of assigned protection factor)

Items of RPE have an assigned protection factor (APF), which is assigned after research and testing by the manufacturer who simulates its use in laboratory conditions. The amount of contaminant in the atmosphere is measured and then, after a set period of time, the amount of contaminant in the facepiece is measured. The APF is determined by dividing the amount of contaminant in the atmosphere by the amount in the facepiece, which gives a number value. The nearest APF number lower than the calculated value is assigned to the RPE. As there are only a few number ratings assigned to RPE the number will be either – 4, 10, 40, 200 or 2000 - the higher the factor the more protection is provided by the RPE.

RPE with a APF of 10 will reduce the wearer's exposure by a factor 10 if properly used, therefore the wearer will only breathe in one tenth of the amount of contaminant in the workplace air.

The APF required for a specific workplace situation can be calculated using the formula:

$$\text{APF} = \frac{\text{Concentration of contaminant in the workplace}}{\text{Concentration of contaminant in the facepiece}}$$

The workplace concentration can be obtained by measurement and the concentration in the facepiece should be lower than or equal to the workplace exposure limit (WEL) assigned for the contaminant in EH40.

It is important to understand that the APF of an item of RPE is only an indication of what the equipment will provide. Actual protection in the workplace may be different due to how well it fits the wearer or facial stubble as the day progresses and the task being conducted, for example bending and twisting. Therefore, when selecting RPE always choose RPE with an APF greater than the calculated value as it will provide a margin of protection to take account for this.

Example:

- Amount of airborne contaminant measured in the workplace = 20ppm.
- Workplace exposure limit value (from EH40) = 2ppp.
- Minimum theoretical APF required would be: 20/2 = 10.
- A higher value of APF would be recommended to allow for real conditions.

The HSE provides a series of advice sheets to indicate the capabilities of various forms of RPE in terms of its APF and provide advice on its selection and use. A summary of the capability and selection information for the advice sheets follows.

Advice sheet	***APF***	***Type of RPE***
R1	4	Respirators only - Caution: these are not suitable for use in confined spaces. ■ Filtering half mask, EN 149. ■ Filtering half mask with valve, EN 405. ■ Filtering half mask without inhalation valves EN 1827. ■ Half mask EN 140 and filter. ■ Full face mask EN136 and filter. ■ Any of the above devices incorporating a low efficiency P1 particulate filter.
R2	10	Respirators - Caution: these are not suitable for use in confined spaces. ■ Filtering half mask, EN 149. ■ Filtering half mask with valve, EN 405. ■ Filtering half mask without inhalation valves EN 1827. ■ Half mask EN 140 and filter. ■ Full face mask EN136 and filter. ■ Any of the above devices incorporating a medium efficiency P2 particulate filter, gas filter, or gas and P3 filter. ■ Powered hood model TH1 EN 146/EN 12941. ■ Power-assisted mask model TM1 EN 147/EN 12942. Breathing apparatus ■ Compressed airline BA LDH1 hood, helmet or visor EN 1835.
R3	20	Respirators - Caution: these are not suitable for use in confined spaces. ■ Filtering half mask, EN 149.

Diffusion

Diffusers are used to either complement sound adsorption or as an alternative. Unlike sound absorption materials they do not remove sound energy, but can be used to effectively reduce distinct echoes and reflections. A hard surface will reflect most of the energy at an angle equal to the angle of incidence whereas a diffuser will cause the sound energy to be radiated in many directions.

Barriers

In some situations, noise levels, at a distance from the source, can be reduced by the use of noise barriers. Screens and barriers place an obstacle in the noise transmission path. Barriers work on the principle of increasing the effective distance between the noise source and the receiver and elimination of the line-of-sight sound path. The effectiveness of the barrier will depend on the frequency of the sound. At low frequencies barriers will give little or no noise reduction. Barriers are also not effective in reverberant sound fields or for people working close to the source. These limitations mean that they are best used in conjunction with other reduction techniques.

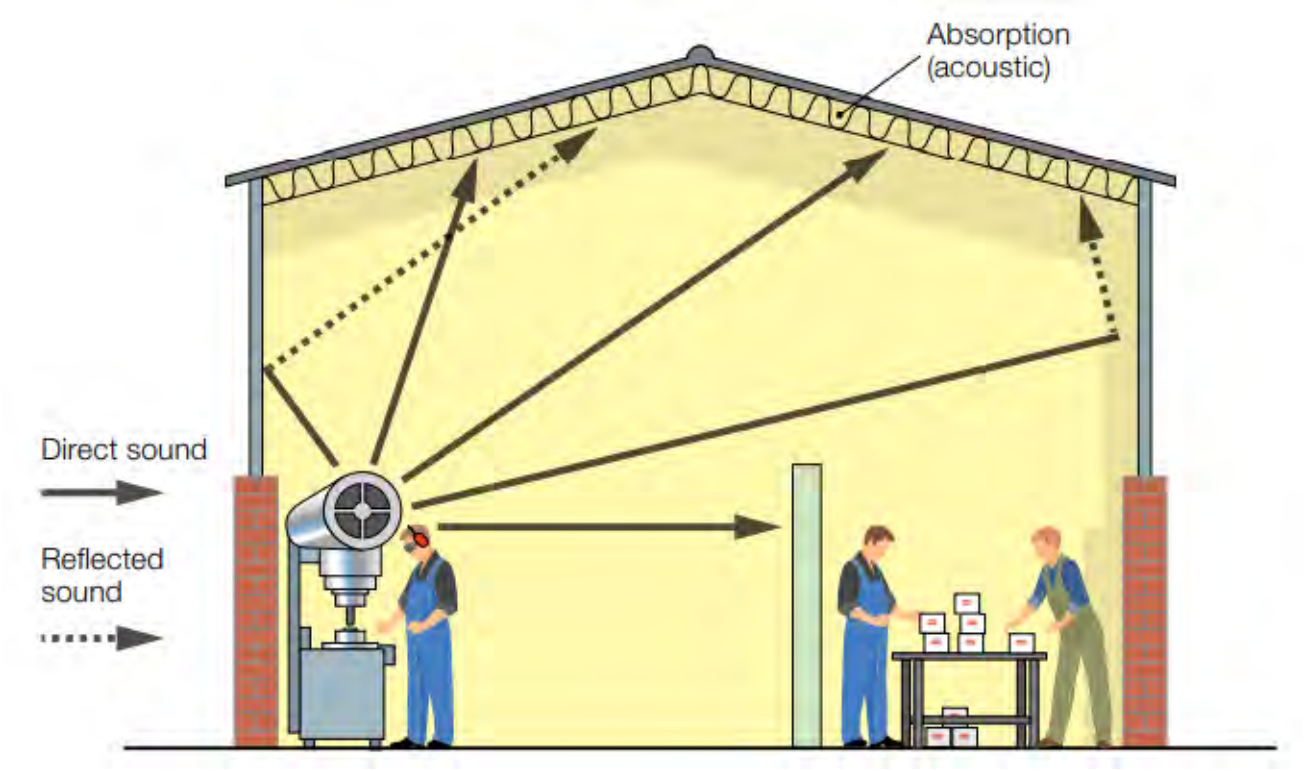

Figure 11-26: Use of absorption and a barrier along the transmission path. *Source: UK, HSE, Controlling Noise at Work, L108.*

Acoustic Enclosure

Acoustic enclosures are widely used in industry, but are not suitable for machines that need to be accessed frequently. This will include most workshop machines. Typically, enclosures can be used with machines like pumps, compressors and conveyors. An enclosure is simply a sound attenuating cover fitted over a noise source. If operators work within a noise enclosure, they are likely to be exposed to an increased sound level. Enclosures can be full or partial depending on what it is enclosing.

For an enclosure to provide adequate attenuation the following steps should be taken:

- The enclosure should be built with a material such as brick, metal or wood.
- Doors and inspection hatches must be made to fit tightly.
- The inside of the enclosure should be lined with a sound absorbent material such as mineral, wool or foam rubber etc.
- If openings are required for ventilation or material input/output they should have some form of sound attenuation fitted.
- Gaps for services (cables, pipes etc.) should be sealed.
- To prevent the transmission of vibration, the machine should be vibration isolated from the enclosure and the floor.
- All services to the machine must have flexible connections.