

## Section 6

### Structure and content

The course is structured into two modules: an online pre-reading module (Module 1) and a one day taught module (Module 2).

#### Module 1: Identifying health hazards on construction sites

Students are strongly recommended to complete the online pre-reading module before attending the one day taught course. This will ensure that all students attending the course have a similar level of understanding of health hazards on construction sites before attending the taught course. The course can be accessed at: [www.bohs-hub.org](http://www.bohs-hub.org)

#### Module overview

The module teaches students how to identify the health hazards on construction sites, and the ill health effects caused by different health hazards.

#### Learning outcomes

Upon completion of the online module, students should:

- Understand the health aspect of health and safety and the role of occupational hygiene.
- Be able to identify the main health hazards on a construction site, and the work processes that cause them.
- Know how to identify the health effects caused by a hazardous substance or work process.
- Understand more about the long-term health effects and diseases that can be caused by certain work processes on a construction site.

#### Module content

The online module includes the following sections:

- What is health?
- Overview of health hazards
- Overview of hazardous substances
- Identification of hazardous substances
- Skin hazards
- Construction dusts – silica, asbestos and wood dust
- Noise
- Vibration
- Musculoskeletal hazards

### **Learning time**

The online module will take approximately two hours, although candidates may stop and start as often as they wish.

### **Assessment**

To test the candidate's learning, there is an End of Module quiz at the end of the module, which comprises of fixed response questions (e.g. multiple choice, fill in the gaps, mix and match exercises). There is also a terminology quiz at the end of the hazardous substances section.

It is not compulsory for students to complete the quizzes, although it is highly recommended they do so in order to consolidate their learning.

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## **Module 2: Controlling health risks in construction**

This is the one day taught course, which runs as face-to-face classroom learning. This includes a multiple-choice examination at the end of the course.

### **Module objective**

Students will learn about the different health risks present on construction sites, and the control methods they can use to manage these health risks.

### **Learning outcomes**

At the end of the taught course, candidates will:

- Understand the importance of controlling health risks on construction sites.
- Understand the role that occupational hygiene plays in managing these risks.
- Be able to identify health risks and their potential significance for common construction work processes.
- Be able to identify chemical-based hazardous substances by using the information on labels and safety data sheets.
- Be able to identify appropriate control options for common construction work processes.
- Be able to identify where expert help is needed.

## Module content

The module is structured into six sections, each with an indicative time allocation:

Section		Time allocation
1	Health risks on construction sites	20%
2	Chemical hazards	30%
3	Physical hazards	10%
4	Ergonomic hazards	5%
5	Principles of control	25%
6	Personal Protective Equipment (PPE)	10%

## 1. Health risks on construction sites (20%)

### 1.1 Introduction to health risks

#### 01.01.01 What is a health risk?

- Outline what 'health' and 'safety' means. Differentiate between health risks and safety risks.
- Discuss and summarise the main health hazards found on construction sites (dusts, gases, vapours, noise, vibration, musculoskeletal etc.)

#### 01.01.02 The size of the problem

- HSE statistics from health and safety incidents in the construction industry.

#### 01.01.03 Overview of managing health risks

- Discuss three main aspects of health – occupational health, wellbeing and occupational hygiene.
- Emphasise the importance of recognising and controlling health risks.
- Explain the role of occupational hygiene and examples of good practice.
- Briefly summarise main legal requirements (e.g. COSHH) and how health and safety legislation uses the Assess-Control-Manage principle.

### 1.2 Risk assessment

#### 01.02.01 Overview of risk assessments

- Outline the principles of risk assessment, using the HSE's five step process.

#### 01.02.02 Hazard vs. risk

- Discuss the difference between a hazard and a risk. Explain what exposure means.
- Discuss the formula for calculating levels of risk (Risk = Hazard x Exposure).

01.02.03 Discuss risk assessment examples for hazards and risks.

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## 2. Chemical hazards (30%)

### 02.00.01 Sources of chemical hazards

- Overview of the different sources of chemical hazards - brought-in hazards and process-generated hazards.

### 02.00.02 Review of chemical hazards

- Brief overview of the change in legislation from the old hazard symbols and terminology to the new system (CLP Regulations).

### 02.00.03 Brought-in hazards

- Outline the most common brought-in hazards on construction sites (paint, oil etc.)
- Discuss how to identify the hazardous substances contained within a brought-in product, and the ill health effects they can cause (e.g. irritation, organ damage etc.)

### 02.00.04 Sources of information for hazards

- Discuss how to access and understand the information on product labels. This includes hazard terminology (e.g. carcinogenic, toxic etc.)
- Identify the standard hazard symbols and statements used on labels and what they mean.
- Briefly discuss Safety Data Sheets (SDSs) as an additional source of information.

### 02.00.05 Process-generated hazards

- Discuss the most common process-generated hazards on a construction site, and the work tasks that cause them (e.g. silica dust, diesel fumes, wood dust, welding fume etc.)
- Discuss how to identify process-generated hazards, and the sources of information that can be referred to.
- Discuss the most common ill health effects caused by chemical hazards, and what causes them (e.g. silicosis, asbestos diseases).

### 02.00.06 Skin hazards

- Discuss skin hazards, their causes and their health effects (e.g. cement burns, dermatitis).
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### 3. Physical hazards (10%)

#### 3.1 Overview of physical hazards

03.01.01 Discuss what is meant by a 'physical hazard'. Identify the common sources of physical hazards on a construction site.

#### 3.2 Noise

03.02.01 **What is noise?**  
Discuss the harmful effects of noise.

03.02.02 **How loud is too loud?**

- Brief overview of how sound is measured, including a brief explanation of A-weighted decibels (dB[A]).
- Discuss the legal limits for noise, including upper and lower action values and the exposure limit value. Give examples of construction site tasks and the levels of noise they create.
- Briefly discuss how to calculate noise levels produced by machinery, and the maximum time period that can be spent on a noisy task before the Action Values are exceeded.
- Discuss how noise risk assessments are carried out.

#### 3.3 Vibration

03.03.01 **Overview of vibration**

- What causes vibration?
- Discuss sources of vibration such as power tools and plant.
- Discuss the health effects of hand-arm vibration and whole body vibration.

03.03.02 **How much vibration is too much?**

- Briefly discuss how vibration is measured ( $m/s^2$ ).
- Briefly discuss the legal requirements for vibration – the action value and exposure limit value.
- Overview of how hand-arm vibration risk assessments are carried out.

#### 3.4 Ultraviolet radiation

03.04.01 **Overview of ultraviolet radiation (UV)**

- What is ultraviolet radiation?
- Discuss the causes of UV and the health effects (skin cancer, sunburns etc.)

## 4. Ergonomic hazards (5%)

- 04.00.01      **Overview of ergonomics**
- Definition of ergonomics.
  - Discuss the common ergonomic risks on construction sites, such as manual handling tasks and repetitive tasks.
  - Discuss musculoskeletal hazards and their ill health effects, including musculoskeletal disorders (MSDs) and Repetitive Strain Injuries (RSIs).
- 04.00.02      Discuss the control options for ergonomic hazards.
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## 5. Principles of control (25%)

- 05.01.01      **Overview of controlling health risks**
- Discuss the Hierarchy of Controls, and its order of effectiveness: Prevention (elimination and substitution); engineering; work practices (administrative); PPE.
  - Discuss the different control options available for reducing or preventing health hazards (e.g. water suppression, on-tool extraction etc.)
- 05.02.01      **Overview of ventilation systems**
- Discuss what is meant by local exhaust ventilation (LEV) and general ventilation.
- 05.02.02      Outline the basic principles of LEV systems, including their components (hoods, inlet, ducting, filter, fan, outlet) and how they work.
- 05.02.03      Discuss good and bad examples of ventilation systems on construction sites, and how they should be positioned in order to work properly.
- 05.03.01      **Skin hazards**
- Discuss control options to prevent skin hazards.
- 05.04.01      **Noise control**
- Discuss control options to reduce noise.
- 05.05.01      **Vibration control**
- Discuss control options to reduce vibration.
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## 6. Personal Protective Equipment (PPE) (10%)

### 06.00.01 **Overview of Personal Protective Equipment**

- Definition of Personal Protective Equipment (PPE) and Respiratory Protective Equipment (RPE). Discuss the different types available.
- Discuss why PPE is considered to be a 'last resort' and its limitations in protecting workers from health hazards.

### 06.00.02 **Application of PPE**

- Discuss which work tasks PPE and RPE are used for, and how they work.

### 06.00.03 **Selecting RPE**

- Discuss the different types of RPE (air purifying and air supplying), with a brief overview of the level of protection they offer (Assigned Protection Factor).
- Discuss how to select different types of RPE.
- Briefly introduce the online HSE RPE selector tool.

### 06.00.04 **Selecting Chemical Protective Gloves**

- Discuss the limitations of chemical protective gloves and clothing, including how they can fail (penetration, degradation and permeation) and useful life (breakthrough time).
- Discuss how to identify appropriate chemical protective gloves and explain the standard labelling pictograms and information

### 06.00.05 **Managing PPE**

- Summarise the basic principles of managing PPE and RPE, including face fit testing, care and maintenance.