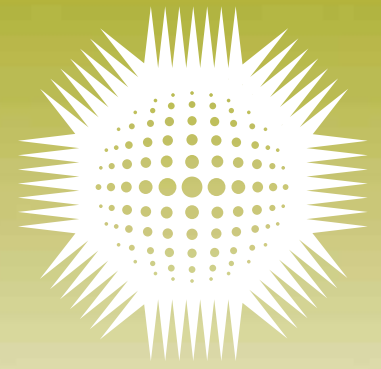


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# **Guide** to the NEBOSH Certificate in Environmental Management



nebosh



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# Guide to the NEBOSH Certificate in Environmental Management (May 2012 specification)

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## **1. Introduction**

The NEBOSH Certificate in Environmental Management is designed for managers, supervisors and employees who have responsibility for managing environmental issues as part of their work in the UK and/or internationally, focusing on assessing environmental management systems. The syllabus includes UK, EU and international references. The qualification is designed to benefit companies in all industry sectors who are seeking to implement effective environmental management systems and to provide line managers with a sound understanding of the principles of managing environmental risk. Since its launch in 2009, over 5700 candidates have achieved the Environmental Certificate.

The syllabus and means of assessment described in this Guide were introduced in 2008, revised in 2009 and updated in 2012 to make them suitable for UK and international delivery.

### **1.1 Benefits for employers**

The importance of the effect of business activities on the environment has long been acknowledged. Until relatively recently, business activities were generally thought to be in conflict with environmental constraints, but many companies, irrespective of size or type of business, now recognise that a more efficient use of resources can bring substantial cost savings (eg, raw materials, waste disposal, energy and transport).

In March 2012, the Department for Environment, Food and Rural Affairs (DEFRA) published a report *“An Evidence-based Study into the Benefits of Environmental Management Systems for Small and Medium Enterprises (SMEs) (EV0440)”*. The average value of EMS in cost savings and new sales by UK SMEs was quoted at 15% (£15,000) per £1m turnover in the year following certification, suggesting a payback period of 1 month for new business sales alone versus EMS costs. Two-thirds of those surveyed said that they either had received or expected new sales to be achieved as a result of their EMS.

The European Union (EU) has set targets for 20% renewable energy and a 20% improvement in energy efficiency by 2020, and in the US a majority of states have set standards for generating a proportion of energy from renewable or alternative sources. China is expected to invest US\$770 billion in low carbon energy by 2020, South Korea has allocated 70% of its fiscal stimulus to green growth support, and India has a 10% renewable energy target in 2015. Bloomberg New Energy Finance estimated that total new investment in clean energy alone is estimated to have reached US\$243bn in 2010, up 30% from US\$187bn in 2009. The International Energy Agency predicts that £8 trillion of investment in new energy sources will be required over the next 15 years.

Driven by tighter environmental regulation, increased development and scarce natural resources, Impax Asset Management estimates environmental markets account for 8% of the global stock market and have aggregate annual revenues of US\$500 billion with annual growth rates of 10-20%. In 2006, DEFRA estimated global environmental markets were projected to reach US\$688 billion in 2010 and just under US\$800 billion by 2015.

Planning ahead to take account of new environmental standards and legislation can minimise the costs of modifying or replacing equipment and updating working practices. Increasingly, business partners prefer to deal with environmentally responsible companies. Banks, insurers and other sources of finance may avoid businesses that do not take environmental matters seriously and expose themselves to unnecessary environmental risk. Those that are considered environmentally aware may benefit from better access to capital and lower insurance premiums.

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The business impact of environmental incidents is also compelling: in addition to the direct cost of sick pay and absence, employers can find themselves dealing with criminal prosecution, claims for compensation, adverse publicity and harm to both business reputation and profitability. Failure to act in an environmentally responsible manner can bring businesses into conflict with the local community, pressure groups and other employers.

This qualification can be delivered within an organisation, or employees can attend accredited training courses run throughout the UK by our network of accredited course providers. NEBOSH course providers offer a variety of flexible course formats, so training can be arranged according to employer needs.

## **1.2 Qualification level and UK accreditation**

The NEBOSH Certificate in Environmental Management is accredited and credit rated by the Scottish Qualifications Authority (SQA - [www.sqa.org.uk](http://www.sqa.org.uk)) for delivery across the UK. It is rated within the Scottish Credit and Qualifications Framework (SCQF - [www.scqf.org.uk](http://www.scqf.org.uk)) at SCQF Level 6 with 9 SCQF credit points.

For users in England, Wales and Northern Ireland, this is comparable to a Vocationally-Related Qualification (VRQ) at Level 3 within the National Qualifications Framework (NQF) and Qualifications and Credit Framework (QCF), or A-Level standard.

For further information please refer to the “Qualifications can cross boundaries” comparison chart issued by the UK regulators, available at the SQA ([www.sqa.org.uk](http://www.sqa.org.uk)) website. For further information regarding UK qualification levels, please refer to the “*Qualifications can cross boundaries*” comparison chart issued by the UK regulators, available at the SQA website ([www.sqa.org.uk](http://www.sqa.org.uk)).

## **1.3 Key topics covered**

- Environmental Management Systems and impact assessments
- Sources and use of energy and energy efficiency
- Control of pollution
- Planning for and dealing with environmental emergencies
- Practical application of knowledge and understanding

## **1.4 Course tuition and private study time requirements**

**Unit EC1:** 35 hours tuition and 25 hours private study

**Total: 60 hours**

**Unit EC2:** 2 hours tuition and 8 hours private study

**Total: 10 hours**

A programme of study therefore needs to be based around a minimum of **37 taught hours** and approximately **33 hours of private study** for an overall total of **70 Hours**.

A full-time block release course would be expected to last for a minimum of five working days and a part-time day release course would be spread over at least five weeks. For candidates studying by open or distance learning, the tuition hours should be added to the recommended private study hours to give the minimum number of hours that this mode of study will require.

Quoted hours *do not* include assessment time, ie, sitting written examinations or the practical application unit (see 1.5).

## **1.5 Entry requirements**

There are no specific barriers, in terms of academic qualifications or skills, to entry to the NEBOSH Environmental Certificate programme. However, it should be noted that currently the assessments are offered, and must be answered, in English only, and that the course includes a requirement to write a short report, which must also be in English. Candidates should discuss this with the accredited course provider before undertaking the qualification.

## **1.6 Minimum standard of English required for candidates**

The standard of English required by candidates studying for the NEBOSH Environmental Certificate must be such that they can both understand and articulate the concepts contained in the syllabus. It is important to stress that the onus is on accredited course providers to determine their candidates' standards of proficiency in English.

NEBOSH recommends to accredited course providers that candidates undertaking this qualification should reach a minimum standard of English *equivalent* to an International English Language Testing System score of **6.0** or higher in IELTS tests in order to be accepted onto a programme for the Certificate in Environmental Management.

For further information please see the latest version of the IELTS Handbook or consult the IELTS website: [http://www.ielts.org/institutions/test\\_format\\_and\\_results.aspx](http://www.ielts.org/institutions/test_format_and_results.aspx)

Candidates wishing to assess their own language expertise may consult the IELTS website for information on taking the test: [http://www.ielts.org/institutions/institutions\\_faqs.aspx](http://www.ielts.org/institutions/institutions_faqs.aspx)

## **1.7 Legislation**

The syllabus refers to international conventions, standards and legislation. Where this qualification is delivered overseas, accredited course providers may refer to examples of local legislation as part of the course programme but examination questions will not refer to specific legislation, but will refer to international conventions, standards and good practice as indicated in the syllabus.

## **1.8 Legislative updates**

Relevant new international conventions and standards will become examinable in detail six months after their date of introduction. However, candidates will be expected to be essentially up-to-date at the time of the examination and, whilst a detailed knowledge will not be expected, reference to new or impending international conventions and standards and/or legislation, where relevant to an examination question, will be given credit.

Please note, NEBOSH will not ask questions related to international conventions and standards that have been repealed, revoked or otherwise superseded.

**NB:** Accredited course providers are expected to ensure their course notes remain current with regard to new international conventions, standards and/or legislation.

## **1.9 National Occupational Standards (NOS) and best practice**

The syllabus is mapped to the relevant National Occupational Standard (NOS):

- NOS for Environmental Awareness and Management (December 2009), published by Lantra Sector Skills Council ([www.lantra.co.uk](http://www.lantra.co.uk))

The mapping of the syllabus units to each NOS can be found on pages 12-13.

## **1.10 Qualification type**

NEBOSH qualifications are categorised as 'Other' qualifications by SQA Accreditation in Scotland. These are categorised as Vocationally-Related Qualifications (VRQs) in England, Wales and Northern Ireland.

VRQs provide the knowledge and practical skills required for particular job roles through a structured study-based training programme, that combine the testing of knowledge and understanding in written examinations with practical application of learning in the workplace.

VRQs are a popular type of qualification because they are nationally recognised, flexible and offer routes for progression to employment or further study.

## **1.11 Qualification progression**

The Environmental Certificate is intended to provide a sound basis of progression to the NEBOSH National Diploma in Environmental Management currently accredited in the Scottish Credit and Qualifications Framework (SCQF - [www.scqf.org.uk](http://www.scqf.org.uk)) at SCQF Level 10, comparable to NQF/QCF Level 6 in England, Wales and Northern Ireland, or Honours Degree standard.

Further information can be found on our website: [www.nebosh.org.uk/qualifications](http://www.nebosh.org.uk/qualifications)

## **1.12 Programmes offered by NEBOSH-accredited course providers**

Accredited course providers can be located using the 'Where to study' tab on our website: [www.nebosh.org.uk](http://www.nebosh.org.uk)

**NB:** Candidates are advised to check up-to-date information on course dates with accredited course providers directly.

## **1.13 Examination dates**

'Standard' examination dates for this qualification are available in March, June, September and December annually. Accredited course providers may request 'on-demand' examinations on a date of their choosing for this qualification.

## **1.14 Specification date**

The May 2012 specification for this qualification replaces the previous March 2009 specification for all examinations from (and including) 1 January 2013.



## 1.15 Syllabus development and review

The syllabus has been developed by NEBOSH following extensive consultation with key stakeholders, notably accredited course providers, professional bodies, employers, standards setting organisations, enforcement bodies and subject experts. NEBOSH would like to take this opportunity to thank all those who participated in the development, piloting and implementation of this qualification.

## 1.16 Further information for candidates

Further information for candidates including a qualification overview leaflet, examiner's report and guidance regarding the project unit can be found via the NEBOSH website ([www.nebosh.org.uk](http://www.nebosh.org.uk)).

## 1.17 Further information for accredited course providers

Further information for accredited course providers including policies and procedures and guidance on the project unit can be found in the accredited course providers' section of the NEBOSH website.

## 1.18 Transitional arrangements

The May 2012 specification for this qualification has been replaced by the April 2021 specification. The following dates are applicable to all learners who are currently studying the May 2012 specification.

<b>31 December 2021</b>	Last date that <b>new learners*</b> can be registered to the 2012 specification
<b>1 January 2022</b>	2012 specification - registrations for <b>existing learners** only</b>
<b>5 August 2023</b>	2012 specification - last assessment date

\* A **new learner** is classed as a person who has not been registered for an assessment of the 2014 specification.

\*\* An **existing learner** is a person who has been registered for at least one unit of the 2014 specification (status must be studying, absent, Pass or Refer).

Further details can be found on the NEBOSH website ([www.nebosh.org.uk](http://www.nebosh.org.uk)).

## **2. Qualification structure**

### **2.1 Unit assessment**

The NEBOSH Environmental Certificate consists of two units, each separately assessed. Candidates may choose to take one or both of the units at the same time or at different times, subject to the timescales outlined in this Guide.

#### **Unit EC1: Management and control of environmental hazards**

- Unit EC1 is a taught unit, assessed by one two-hour written examination
- The written examination consists of ten 'short-answer' questions (8 marks each) and one 'long-answer' question (20 marks)
- All questions are compulsory
- Candidate scripts are marked by external examiners appointed by NEBOSH
- A sample examination paper can be found in Section 5.

#### **Unit EC2: Environmental practical application**

- Unit EC2 is assessed by a practical examination carried out in the candidate's own workplace
- This is held on a date set by the accredited course provider and must be taken within 10 working days of a written examination
- The practical examination is internally assessed a person proposed to NEBOSH by an accredited course provider and moderated by external moderators appointed by NEBOSH
- Guidance for candidates and accredited course providers is available in a separate document available on the NEBOSH website ([www.nebosh.org.uk](http://www.nebosh.org.uk)).

**NB:** For candidates planning to take both units together, Unit EC2 (Environmental practical application) is not normally offered independently of the taught unit (Unit EC1). Candidates will normally be required to complete the 2 assessment within 10 working days of sitting the examination for Unit EC1, on a date to be agreed with their accredited course provider.

NEBOSH applies best practise in relation to assessment setting and marking. NEBOSH uses external assessment for written examinations and assignments: scripts are sent to NEBOSH and undergo rigorous marking, checking and results determination processes to ensure accuracy and consistency.

### **2.2 Unit exemptions**

There are no exemptions available for this qualification.

### **2.3 Achieving the qualification**

Candidates will need to pass **both units** within a **two-year** period to achieve the qualification. The two years commences from the result declaration date of the first successful unit.

Units which have a 'Pass' mark but are older than 2-years, will not be counted towards the overall qualification. Any such units will need to be retaken and a 'Pass' achieved in the unit/s before the qualification can be awarded.

## **2.3 Unit pass standards**

The pass standard for each unit may vary according to pre-determined criteria but is normalised to 45% for the written paper (EC1) and 60% for the practical application (EC2).

## **2.4 Unit certificates**

Candidates who are successful in an individual unit will be issued with a unit certificate, normally within 40 working days of the issue of the result notification. Units are not graded and the unit certificates will show a 'Pass' only.

## **2.5 Qualification grade**

When candidates have been awarded a unit certificate for both units (ie, have achieved a Pass in EC1 and EC2), the marks are added together and a final grade is awarded as follows:

<b>Pass</b>	105 - 124 marks
<b>Credit</b>	125 - 144 marks
<b>Distinction</b>	145 marks or more

## **2.6 Qualification parchment**

Once a candidate has achieved a Pass in both units and the qualification grade has been awarded they are normally considered to have completed the qualification and a qualification parchment will be issued, usually within 40 working days of the result declaration date for the second successfully completed unit.

However, once the result of the second successfully completed unit has been issued the candidate has **20 working days** from the date of issue of that result to either:

- Inform NEBOSH in writing of their intention to re-sit a successful unit for the purposes of improving a grade
- Submit an Enquiry About Result (EAR) request (see Section 3.3).

## **2.7 Re-sitting unit/s**

If a candidate's performance in a unit is lower than a pass, candidates may re-sit just the unit in which they have been unsuccessful providing that they re-sit **within 2-years of the result declaration date for their first successful unit** (also see Section 2.2). Where a candidate has yet to achieve a successful unit of a qualification, the 2-year rule does not apply until a unit has been successfully achieved.

Candidates who wish to improve the mark from a unit they have successfully passed in order to improve their qualification grading to a credit or distinction, may do so providing that they re-sit the unit/s within the qualifying period (see section 2.2). The candidate must notify NEBOSH in writing if they wish to do this (see section 2.6). Any candidate who re-sits a successful unit, and does not surpass their original mark, eg, is referred in the paper, will keep

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the *original* mark awarded. Re-sit marks are not capped. There is no limit to the number of re-sits within this 2-year period.

Candidates who register for any unit of the Certificate in Environmental Management whilst awaiting a result from a previous sitting of an examination for the same qualification may not seek a refund of the registration fee if they retrospectively claim exemption from any part of the qualification, subsequent to the issue of the awaited result.

## **3. Policies**

### **3.1 Requests for access arrangements/reasonable adjustments**

Access arrangements and reasonable adjustments are modifications which are approved in advance of an assessment to allow attainment to be demonstrated by candidates with either a permanent or long-term disability or learning difficulty, or temporary disability, illness or indisposition.

Requests for access arrangements or reasonable adjustments must be made to NEBOSH by accredited course providers at least one month before the assessment.

For further details see the NEBOSH *“Policy and procedures for access arrangements, reasonable adjustments and special consideration”* available from the NEBOSH website ([www.nebosh.org.uk](http://www.nebosh.org.uk)).

### **3.2 Requests for special consideration**

Special consideration is a procedure that may result in an adjustment to the marks of candidates who have not been able to demonstrate attainment because of temporary illness, injury, indisposition or an unforeseen incident at the time of the assessment.

Candidates who feel disadvantaged due to illness, distraction or any other reason during the assessment must report this to the invigilator (or the accredited course provider in the case of a practical examination) before leaving the examination room and request that their written statement, together with the invigilator’s comments on the statement, be sent by the accredited course provider to NEBOSH.

Requests for special consideration must be made to NEBOSH by the accredited course provider as soon as possible and no more than seven working days after the assessment.

For further details see the NEBOSH *“Policy and procedures on reasonable adjustments and special consideration”* available from the NEBOSH website ([www.nebosh.org.uk](http://www.nebosh.org.uk)).

### **3.3 Enquiries about results and appeals**

NEBOSH applies detailed and thorough procedures to moderate and check assessment results before they are issued. It thereby ensures that the declared results are a fair and equitable reflection of the standard of performance by candidates.

There are, however, procedures for candidates or accredited course providers to enquire about results that do not meet their reasonable expectations. An ‘enquiry about result’ (EAR) must be made in writing within one month of the date of issue of the result to which it relates.

For details see the NEBOSH *“Enquiries and appeals policy and procedures”* document available from the NEBOSH website ([www.nebosh.org.uk](http://www.nebosh.org.uk)).

### **3.4 Malpractice**

Malpractice is defined as any deliberate activity, neglect, default or other practice by candidates and/or accredited course providers that compromises the integrity of the assessment process, and/or the validity of certificates. Malpractice may include a range of issues from collusion or use of unauthorised material by candidates, to the failure to maintain appropriate records or systems by accredited course providers, to the deliberate falsification of records in order to claim certificates. Failure by an accredited course provider to deal with identified issues may in itself constitute malpractice.

For further details see the NEBOSH *“Malpractice policy and procedures”* document available from the NEBOSH website ([www.nebosh.org.uk](http://www.nebosh.org.uk)).

## **4. Notes for tutors**

### **4.1 Tutor references**

Tutor references are given at the end of each unit and are split between statutory provisions and guidance documents. These references are given to aid tutors with the teaching of the syllabus content; they are not an exhaustive list and tutors can use other references to those quoted in the syllabus.

### **4.2 Teaching of units**

Although the syllabus sets out the Units and Elements in a specific order, tutors can teach the Units and Elements in any order they feel is appropriate. Course providers will need to reflect this in the timetables which are submitted for approval as part of the accreditation/re-accreditation process.

### **4.3 Conflict of interest**

Accredited Course Provider staff including Head of Accredited Course Providers, Tutors, Administrators, Examinations Officers and Invigilators must declare in writing to NEBOSH any employment and/or familial, spousal or other close personal relationship with any examination or assessment candidate. Further information can be found in the '*Instructions for Conducting Examinations*' document.

### **4.4 Minimum standard of English required for tutors**

Tutors who are based overseas and wish to deliver the NEBOSH Certificate in Environmental Management must have a good standard of English. They must be able to articulate the concepts contained in the syllabus. The accredited course provider must provide evidence of the tutor's standard of English when submitting the tutor's CV for approval.

NEBOSH's requirement is for tutors delivering this qualification to have reached a minimum standard of English *equivalent* to an International English Language Testing System score of **7.0** or higher in IELTS tests.

## 5. Syllabus for the NEBOSH Certificate in Environmental Management (May 2012 specification)

### Structure

The qualification is divided into two units. Unit EC1 is further divided into nine elements.

The matrix below indicates how the syllabus elements map to the relevant National Occupational Standards (See also section 1.10):

- NOS for Environmental Awareness and Management (December 2009), published by Lantra Sector Skills Council ([www.lantra.co.uk](http://www.lantra.co.uk)). The NOS can be downloaded from <https://www.ukstandards.org.uk/Pages/index.aspx>.

### Unit EC1: Management and control of environmental hazards

Element Number	Element Title	Recommended hours	Relevant NOS units and elements <sup>1</sup>	Page
1	Foundations in environmental management	6	EM1-9, 15	13
2	Environmental management systems	6	EM1-4, 7, 15	15
3	Environmental impact assessments	7	EM3, 11, 15	18
4	Controls of emissions to air	2	EM3-6, 15	20
5	Control of contamination of water resources	3	EM3-6, 15	21
6	Control of waste and land use	4	EM3-6, 15	23
7	Sources and use of energy and energy efficiency	3	EM3-6, 9-10, 15	25
8	Control of environmental noise	2	EM3-6, 15	26
9	Planning for and dealing with environmental emergencies	2	EM1-2	27
<b>Minimum unit tuition time</b>		<b>35</b>		
<b>Recommended private study time</b>		<b>25</b>		



## Unit EC2: Environmental practical application

Element Number	Element Title	Recommended hours	Relevant NOS units and elements <sup>1</sup>	Page
1	Environmental practical application	2	EM2-10, 15	1
	<b>Minimum unit tuition time</b>	<b>2</b>		
	<b>Recommended private study time</b>	<b>8</b>		
	<b>Minimum total unit tuition time</b>	<b>37</b>		
	<b>Recommended total private study time</b>	<b>33</b>		
	<b>Total overall hours</b>	<b>70</b>		

**Note to table**

Quoted hours *do not* include the time allocation to sitting the written examination or the practical application unit. For candidates studying by open or distance learning, the tuition hours should be added to the recommended private study hours to give the minimum number of hours that this mode of study will require (including own-study and tutorial time).

## **5.1 Unit EC1: Management and control of environmental hazards**

### **Element 1: Foundations in environmental management**

#### **Learning outcomes**

On completion of this element, candidates should be able to demonstrate understanding of the content through the application of knowledge to familiar and unfamiliar situations. In particular they should be able to:

- 1.1 Outline the scope and nature of environmental management
- 1.2 Explain the ethical, legal and financial reasons for maintaining and promoting environmental management
- 1.3 Outline the importance of sustainability and its relationship with Corporate Social Responsibility
- 1.4 Explain the role of national governments and international bodies in formulating a framework for the regulation of environmental management.

#### **Content**

##### **1.1 The scope and nature of environmental management**

- Definition of the environment as “the surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation”. ‘Surroundings’ can extend from within an organisation to the global system
- The multi-disciplinary nature of environmental management and the barriers to good standards of environmental management within an organisation (complexity, competing and conflicting demands, behavioural issues)
- The size of the environmental ‘problem’ in terms of the key environmental issues:
  - local effects of pollution (noise, waste, lighting, odour)
  - carbon emissions and climate change
  - air pollution and the ozone layer
  - water resources
  - deforestation, soil erosion and land quality
  - material resources and land despoliation (land rights etc)
  - energy supplies
  - waste disposal and international waste trade
  - agricultural issues arising from trade between developing and developed economies (eg, create landfill sites in place of agricultural).

##### **1.2 The ethical, legal and financial reasons for maintaining and promoting environmental management**

- The rights and expectations of local residents including indigenous peoples, supply chain, customers and employees
- Outcomes of incidents in terms of environmental and human harm, and legal and economic effects on the organisation

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- The actions and implications of pressure groups
- Overview of legal issues – breaches of national or local laws and individual legal rights
- Penalties such as fines/imprisonment and rights to compensation
- Different levels of standards and enforcement in many jurisdictions; the role of responsible business
- The business case for environmental management: direct and indirect costs of environmental accidents: insured and uninsured costs.

**1.3 The importance of sustainability**

- Meaning of sustainability such as "the right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations" (with reference to Rio Earth summit)
- Importance of sustainable development as a means of ensuring:
  - effective protection of the environment
  - prudent use of natural resources
  - economic development and maintenance of stable levels of growth
  - relationship of environmental performance and sustainability to Corporate Social Responsibility, environmental risks from outsourcing
  - social progress.

**1.4 The role of national governments and international bodies in formulating a framework for the regulation of environmental management**

- International law governing the environment (eg, OSPAR Convention, Montreal Protocol, Basel Convention, Ramsar Convention)
- The role of the European Union in harmonising environmental standards
- The importance of knowing and understanding local legislation
- Meaning of Best Available Technique (BAT), Best Practicable Environmental Option (BPEO).
- The role of enforcement agencies and the consequences of non-compliance, including
  - authorising activities- authorisations, consents, licences, etc
  - inspection and sampling
  - serving of notices
  - prosecution.

***Recommended tuition time not less than 6 hours***

## **Element 2: Environmental management systems**

### **Learning outcomes**

On completion of this element, candidates should be able to demonstrate understanding of the content through the application of knowledge to familiar and unfamiliar situations. In particular they should be able to:

- 2.1 Identify the reasons for implementing an environmental management system (EMS)
- 2.2 Describe the key features and appropriate content of an effective EMS, ie, ISO 14001:2015
- 2.3 Outline the benefits and limitations of introducing a formal EMS such as ISO 14001/BS 8555/EMAS into the workplace
- 2.4 Identify key members of the ISO 14000 family of standards and their purpose.

### **Content**

#### **2.1 Reasons for implementing an environmental management system (EMS)**

- Demonstrates management commitment
  - sharing of common management system principles with quality and health and safety management - enabling integration
  - stakeholder pressure, eg, customer/regulatory influence
  - Corporate Social Responsibility

#### **2.2 The key features and appropriate content of an effective EMS based on the requirements of ISO 14001**

- The context of the organisation ie, understanding the important issues that can either positively or negatively affect the way an organisation manages its environmental responsibilities
  - understanding the context and the needs and expectations of interested parties
  - determining the scope of the EMS
- Leadership
  - environmental policy:
    - appropriate for the purpose and context of the organisation
    - provides the framework for setting and reviewing objectives and targets
    - commitment to the protection of the environment
    - commitment to fulfil compliance obligations
    - provides a commitment to continual improvement
    - is communicated to all relevant parties
  - responsibilities and authorities of roles assigned and communicated
- Planning:
  - actions to address risks (potential adverse effects) and opportunities (potential beneficial effects)
  - environmental aspects
  - compliance obligations (including legal and other requirements (other requirements include but are not limited to, agreements with NGOs, agreements with public authorities, voluntary codes of practice etc)

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- environmental objectives (including plans to achieve them)
- Support:
  - resources
  - competence
  - awareness
  - communication (internal and external)
  - documented information
- Operation
  - operational planning and control
  - emergency preparedness and response (also see Element 9)
- Performance evaluation:
  - monitoring, measurement, analysis and evaluation
    - active monitoring measures including the monitoring of performance standards of all relevant parties and the systematic inspection of plant and premises, monitoring of emissions, waste, water and energy data; use of environmental inspections and tours and their roles within a monitoring regime
    - reactive monitoring measures including data on near misses and complaints by workforce and neighbours and enforcement action(s)
    - review of environmental performance:
      - gathering information to review environmental performance
      - incident data
      - inspections
      - control and monitoring of emissions
      - energy and raw material management
      - waste management
      - surveys, tours and sampling
      - quality assurance reports, audits, monitoring data/records/reports, complaints
      - investigating environmental incidents and reporting requirements internally and externally
      - reporting on environmental performance
      - feeding into action and development plans as part of continuous improvement
  - evaluation of compliance
  - internal audit programme
    - criteria and scope and purpose of auditing environmental management systems; distinction between audits and inspections
    - pre-audit preparations (including selection of suitable auditors), information gathering, notifications and interviews
    - responsibility for audits
    - audit results reported to management
    - advantages and disadvantages of external and internal audits
  - management review
- Improvement
  - nonconformity and corrective action
  - continual improvement.

### **2.3 Benefits and limitations of introducing a formal EMS into the workplace**

- Benefits of introducing ISO 14001/BS 8555/EMAS into an organisation:

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- increased compliance with legislative requirements
  - competitive edge over non-certified businesses
  - improved management of environmental risk
  - increased credibility that comes from independent assessment
  - savings from reduced noncompliance with environmental regulations
  - heightened employee, shareholder and supply chain satisfaction and morale
  - meeting modern environmental ethics
  - streamlining and reducing environmental assessments and audits
  - increased resource productivity
- Limitations of introducing ISO 14001/BS 8555/EMAS into an organisation:
    - prescriptive environmental performance levels are not included within the standard
    - improvements in environmental performance can be negligible
    - lack of public reporting for ISO 14001 unlike other internationally recognised management systems ie, Eco-Management and Audit Scheme (EMAS)
    - inconsistency of external auditors (eg, differing levels of knowledge and experience of the particular industry)
    - implementing an EMS may have costs that are too high for small and medium-sized enterprises.

**2.4 Key members of the ISO 14000 family of standards and their purpose**

- ISO 14004 Guidance on 14001:2016
- ISO 14020 environmental labels
- ISO 14031 evaluating environmental performance
- ISO 14064 greenhouse gas accounting and verification
- ISO 14005 Environmental management systems -- Guidelines for the phased implementation of an environmental management system, including the use of environmental performance evaluation.

***Recommended tuition time not less than 6 hours***

## **Element 3: Environmental impact assessments**

### **Learning outcomes**

On completion of this element, candidates should be able to demonstrate understanding of the content through the application of knowledge to familiar and unfamiliar situations. In particular they should be able to:

- 3.1 Explain the reasons for carrying out environmental impact assessments
- 3.2 Describe the types of environmental impact
- 3.3 Identify the nature and key sources of environmental information
- 3.4 Explain the principles and practice of impact assessment.

### **Content**

#### **3.1 Reasons for carrying out environmental impact assessments**

- Meaning of aspects, impacts (ref ISO: 14001:2015)
- Aims and objectives of impact assessment
- Cradle-to-grave concept (life cycle analysis).

#### **3.2 Types of environmental impact**

- Direct and indirect impacts, including global impacts
- Contamination of atmosphere
- Contamination of land
- Contamination of aquatic environment
- Positive and negative effects on the community including visual impact and loss of amenity
- Positive and negative effects on the ecosystem.

#### **3.3 Nature and key sources of environmental information**

- Internal to the organisation:
  - audit and investigation reports
  - maintenance records
  - inspections
  - job/task analysis
  - incident data
  - use of environmental monitoring data to evaluate risk
  - raw material usage and supply
- External to the organisation:
  - manufacturers' data
  - legislation

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- Government or regulatory bodies eg, Environment Agency/Scottish Environment Protection Agency publications, Envirowise, European Environment Agency
- trade associations
- International, European, and British Standards
- IT sources
- encyclopaedias.

**3.4 Principles and practice of impact assessments**

- Linked to the initial environmental review
- Consider normal and abnormal conditions, incidents, accidents and potential emergency situations; past activities, current activities and planned activities
- Concept of source, pathway and receptor when assessing environmental risk
- International impacts; resource abstraction; pollution from mining, transport and processing; waste disposal
- Identifying receptor at risk; flora, fauna, water course, local residents including indigenous peoples etc
- Identification of aspects / impacts with reference to 3.2 above
- Evaluating impact and adequacy of current controls: consideration of scale and severity of the impact, probability of occurrence, duration of impact (or business concerns), sensitivity of receiving environment, consideration of legal or contractual requirements, the concern of interested parties, effect on public image
- Activities of suppliers, degrees of influence on product design
- Supplier selection, transport issues – distribution and staff movements
- Recording significant aspects (ie, from significant impacts identified above) format; information to be recorded
- Reviewing: reasons for review (eg, incidents, process/equipment, changes of staff, legislative changes, elapse of time).

***Recommended tuition time not less than 7 hours***



## **Element 4: Control of emissions to air**

### **Learning outcomes**

On completion of this element, candidates should be able to demonstrate understanding of the content through the application of knowledge to familiar and unfamiliar situations. In particular they should be able to:

- 4.1 Outline the principles of air quality standards
- 4.2 Outline the main types of emissions to atmosphere and the associated hazards
- 4.3 Outline control measures that are available to reduce emissions.

### **Content**

#### **4.1 Air quality standards**

- Meaning, uses of, and the relationship between ppm and mgm-3
- The potential effects of poor air quality
- The role of air quality standards and controls on quality and impurities.

#### **4.2 Main types of emissions to atmosphere**

- Types of emission:
  - gaseous, vapour, odours, mist, fume, smoke, dust, grit, fugitive emissions and fibre and the hazards associated with each
  - common pollutants: sulphur compounds, nitrogen compounds, halogens and their compounds, metals and their compounds, volatile organic compounds.

#### **4.3 Control measures to reduce emissions**

- Control hierarchy: eliminate, minimise, render harmless, with examples
- Examples of technology
  - filtration (filtration with solid media such as bag filter, including the use of local exhaust ventilation with filtration)
  - separation technology including: gravity separators, electrostatic or magnetic separators
  - wet scrubbers (acidified and basified)
  - adsorption
  - water wall
  - difficulties in funding and maintaining equipment in some countries or environments.

***Recommended tuition time not less than 2 hours***

## **Element 5: Control of contamination of water sources**

### **Learning outcomes**

On completion of this element, candidates should be able to demonstrate understanding of the content through the application of knowledge to familiar and unfamiliar situations. In particular they should be able to:

- 5.1 Outline the importance of the quality of water for life
- 5.2 Outline the main sources of water pollution
- 5.3 Outline the main control measures that are available to reduce contamination of water sources.

### **Content**

#### **5.1 Importance of the quality of water for life**

- What is meant by safe drinking water
- The water cycle; sources of water such as groundwater, surface water and desalination
- Water for agriculture and industry
- Impact of water pollution on wildlife
- Over abstraction; water conservation; balancing the different needs
- The potential effects of pollution on water quality.

#### **5.2 Main sources of water pollution**

- Surface water drainage and risks of contamination from spills, etc
- Drainage from mining, quarrying and ore processing
- Process water, sewage and cooling water, leakage from disused process facilities, tanks, etc
- Contamination from natural minerals (eg, radon in Cornwall, arsenic in Bangladesh)
- Groundwater: spillage onto unmade ground allowing build up and seepage through the ground to controlled waters
- Solids such as grit from sites, plastics, etc.

#### **5.3 Main control measures that are available to reduce contamination of water sources**

- Control hierarchy: eliminate, minimise, render harmless, with examples
- Control methods:
  - permits to discharge

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- monitoring water quality, including the meaning, uses of, and the relationship between: chemical oxygen demand (COD), biological oxygen demand (BOD), and total oxygen demand (TOD)
- temperature
- pH
- metal content
- solids content
  
- Controls for storage and spillage:
  - preventing any spillages occurring (through operating procedures, maintenance, etc)
  - lagoons: uses and risks
  - keeping systems separate
  - appropriate storage of incompatible materials
  - bunding of chemical and oil stores
  - use of interceptors
  - separation and marking of drain systems
  - dealing with spillages
  
- Controls for waste water:
  - screening and solids separation
  - sedimentation
  - flotation
  - filtration
  - centrifugal separation
  - correction of pH
  
- Difficulties in funding and maintaining equipment in some countries or environments.

***Recommended tuition time not less than 3 hours***

## **Element 6: Control of waste and land use**

### **Learning outcomes**

On completion of this element, candidates should be able to demonstrate understanding of the content through the application of knowledge to familiar and unfamiliar situations. In particular they should be able to:

- 6.1 Outline the significance of different waste categories and the relationship between category and route of disposal
- 6.2 Explain the importance of minimising waste
- 6.3 Outline how to manage waste
- 6.4 Describe outlets available for waste
- 6.5 Outline the risks associated with contaminated land.

### **Content**

#### **6.1 Waste categories**

- Hazardous
- Non-hazardous
- Other main categories; eg:
  - inert
  - clinical
  - radioactive
  - controlled (UK)
  - special waste (Scotland - equivalent to hazardous in most other countries).

#### **6.2 Minimising waste**

- The problems of waste disposal due to increased volumes from growing populations and higher standards of living
- The waste hierarchy:
  - prevent
  - reduce
  - re-use
  - recover (re-cycle followed by other methods of recovery, eg, energy recovery)
  - disposal
- Benefits and limitations of re-cycling
- Barriers to reuse and recycling and how they can be overcome.

#### **6.3 Managing waste**

- Recognition of the key steps: on site separation, storage, transportation and disposal
- Responsible waste management

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- Segregation, identification and labelling
- Packaging waste
- Electrical and electronic waste
- Regulatory documentation
- Differing requirements for domestic/commercial/industrial waste in many countries (link to Element 6.4)
- Waste from construction projects.

**6.4 Outlets available for waste**

- Landfill and incineration as ultimate disposal routes; advantages and disadvantages (link to energy recovery in Element 7)
- Domestic waste sites, waste transfer stations, waste treatment facilities involving recovery operations
- Waste disposal in developing countries and problems associated with domestic waste
- Costs and the impact of landfill and aggregate taxes.

**6.5 Risks associated with contaminated land**

- The potential effects of contaminated land to the environment
- Liabilities of an organisation from contaminated land, ie, remediation, costs (link to Element 1.2).

***Recommended tuition time not less than 4 hours***

## **Element 7: Sources and use of energy and energy efficiency**

### **Learning outcomes**

On completion of this element, candidates should be able to demonstrate understanding of the content through the application of knowledge to familiar and unfamiliar situations. In particular they should be able to:

- 7.1 Outline the benefits and limitations of fossil fuels
- 7.2 Outline alternative sources of energy and their benefits and limitations
- 7.3 Explain why energy efficiency is important to the business
- 7.4 Outline the control measures available to enable energy efficiency.

### **Content**

#### **7.1 Benefits and limitations of fossil fuels**

- Examples of fossil fuels
- Benefits and limitations of their use as an energy source.

#### **7.2 Other sources of energy**

- Solar, wind, hydroelectric, wave and tidal power, geothermal, nuclear, combined heat and power (CHP), biodigesters, methane recovery
- Benefits and limitations of their use in each case
- Problems of energy supply in remote regions and developing countries (eg, finding wood; and air pollution from inefficient burners and ventilation).

#### **7.3 The importance of energy efficiency**

- Reductions in carbon dioxide emissions
- Savings in energy bills and peak load management.

#### **7.4 Control measures available to enable energy efficiency**

- Insulation, choice of equipment, maintenance and control systems in minimising energy use; supervision
- Building design eg, natural ventilation, solar thermal input
- Fuel choice for transport, energy efficient vehicles, optimisation of vehicle use, car sharing and the use of other options such as teleconferencing.

***Recommended tuition time not less than 3 hours***

## **Element 8: Control of environmental noise**

### **Learning outcomes**

On completion of this element, candidates should be able to demonstrate understanding of the content through the application of knowledge to familiar and unfamiliar situations. In particular they should be able to:

- 8.1 Describe the potential sources of environmental noise and their consequences
- 8.2 Outline the methods available for the control of environmental noise.

### **Content**

#### **8.1 Sources of environmental noise and their consequences**

- The characteristics of noise which lead to it being a nuisance
  - low frequency (can carry long distances)
  - speech such as a tannoy (tend to try to listen and make out what is being said)
  - intermittent such as sirens and explosives
- The effects of noise ie, nuisance, stress, loss of sleep, disruption of wildlife (linked to Element 1.1)
- Sources of industrial environmental noise:
  - noise from commercial activities, eg, machinery, extraction systems, compressor systems, public address systems
  - transport noise
  - agricultural noise, eg, bird-scarers
  - construction noise
  - quarrying and mining
- Other sources of noise:
  - noise from pubs and clubs
  - neighbour noise, eg, loud music
  - intruder and vehicle alarms
  - wind farms.

#### **8.2 Methods for the control of environmental noise**

- Basic noise control techniques (isolation, absorption, insulation, damping, silencing, maintenance regimes), management controls, eg, hours of working, preventing the use of radios and public address systems, controlling vehicle routes.

***Recommended tuition time not less than 2 hours***

## **Element 9: Planning for and dealing with environmental emergencies**

### **Learning outcomes**

On completion of this element, candidates should be able to demonstrate understanding of the content through the application of knowledge to familiar and unfamiliar situations. In particular they should be able to:

- 9.1 Explain why emergency preparedness and response is essential to protect the environment
- 9.2 Describe the measures that need to be in place when planning for emergencies.

### **Content**

#### **9.1 Emergency planning to protect the environment**

- General responsibility or duty not to pollute
- Part of Environmental Management System
- Need for prompt action to protect people and the environment
- Risks of prosecution and other costs
- Reputational issues.

#### **9.2 Planning for emergencies**

- Emergency response plan (to include foreseeable internal and external causes)
- Emergency control centre
- Training and practices
- Recognising risk situations and action to take
- Materials to deal with spills
- Access to site plans
- Inventory of materials
- Environmental hazards associated with fire
- Liaison with regulatory bodies and emergency services
- Protecting and liaising with the local residents, including indigenous peoples
- Handling the press and other media, eg, competency.

***Recommended tuition time not less than 2 hours***



## Unit EC1: Tutor References

### *UK statutory instruments*

<b>Legislation</b>	<b>Country</b>	<b>Element/s</b>
Building Regulations 2010 (Part 6)	UK / Great Britain	7
Clean Air Act 1993	UK / Great Britain	4
Climate Change Act 2008	UK / Great Britain	7
Control of Major Accident Hazards Regulations 2015	UK / Great Britain	1, 2, 3, 9
Energy Information Regulations 2011	UK / Great Britain	7
Environment Act 1995	UK / Great Britain	1
Environment and Safety Information Act 1988	UK / Great Britain	1
Environmental Information Regulations 2004	UK / Great Britain	1
Environmental Protection Act 1990	UK / Great Britain	1, 8
Environmental Protection (Controls on Ozone-Depleting Substances) Regulations 2011	UK / Great Britain	4
Fluorinated Greenhouse Gases Regulations 2015	UK / Great Britain	4
Noise Act 1996	UK / Great Britain	8
Noise and Statutory Nuisance Act 1993	UK / Great Britain	8
Noise Emission in the Environment by Equipment for Use Outdoors Regulations 2001	UK / Great Britain	8
Ozone-Depleting Substances Regulations 2015	UK / Great Britain	4
Pollution Prevention and Control Act 1999	UK / Great Britain	1, 4, 5, 6
Producer Responsibility Obligations (Packaging Waste) Regulations 2007	UK / Great Britain	6
Radioactive Substances Act 1993	UK / Great Britain	6
Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012	UK / Great Britain	6
Salmon and Freshwater Fisheries Act 1975	UK / Great Britain	5
Waste Batteries and Accumulators Regulations 2009	UK / Great Britain	6
Waste Electrical and Electronic Equipment Regulations 2013	UK / Great Britain	6
Water Act 2003 and 2014	UK / Great Britain	5
Water Resources Act 1991	UK / Great Britain	1, 5
Water Industry Act 1991	UK / Great Britain	1, 5
Air Quality (England) Regulations 2000	England	4

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<b>Legislation</b>	<b>Country</b>	<b>Element/s</b>
Air Quality Standards Regulations 2010	England	4
Contaminated Land (England) Regulations 2006	England	6
Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015	England	8
Control of Pollution (Oil Storage) (England) Regulations 2001	England	5
Water Supply (Water Quality) Regulations 2000	England	5
Anti-Pollution Works Regulations 1999	England and Wales	5
Controlled Waste (England and Wales) Regulations 2012	England and Wales	6
Energy Performance of Buildings (England and Wales) Regulations 2012	England and Wales	7
Environmental Permitting (England Wales) Regulations 2016	England and Wales	1, 4, 5, 6
Hazardous Waste (England and Wales) Regulations 2005	England and Wales	6
Landfill Tax Regulations 1996	England and Wales	6
The Surface Waters (Abstraction for Drinking Water) (Classification) Regulations 1996	England and Wales	5
Waste (England and Wales) Regulations 2011	England and Wales	6
Air Quality Standards Regulations (Northern Ireland) 2010	Northern Ireland	4
Anti-Pollution Works Regulations (Northern Ireland) 2003	Northern Ireland	5
Control of Pollution (Oil Storage) Regulations (Northern Ireland) 2010	Northern Ireland	5
Control of Noise (Codes of Practice for Construction and Open Sites) Order (Northern Ireland) 2002	Northern Ireland	8
Controls on Ozone-Depleting Substances Regulations (Northern Ireland) 2011	Northern Ireland	4
Fluorinated Greenhouse Gases Regulations (Northern Ireland) 2015	Northern Ireland	4
Landfill Regulations (Northern Ireland) 2003	Northern Ireland	6
Pollution Prevention and Control (Industrial Emissions) (Northern Ireland) Regulations 2013	Northern Ireland	1, 4, 5, 6
Surface Waters (Abstraction for Drinking Water) (Classification) Regulations (Northern Ireland) 1996	Northern Ireland	5
Waste and Contaminated Land (Northern Ireland) Order 1997	Northern Ireland	6
Water Supply (Water Quality) Regulations (Northern Ireland) 2007	Northern Ireland	5
Air Quality (Scotland) Regulations 2000	Scotland	4
Air Quality Standards (Scotland) Regulations 2010	Scotland	4
Anti-Pollution Works (Scotland) Regulations 2003	Scotland	5

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<b>Legislation</b>	<b>Country</b>	<b>Element/s</b>
Climate Change (Scotland) Act 2009	Scotland	7
Contaminated Land (Scotland) Regulations 2000	Scotland	6
Control of Noise (Codes of Practice for Construction and Open Sites) (Scotland) Order 2002	Scotland	8
Energy Performance of Buildings (Scotland) Regulations 2008	Scotland	7
Landfill (Scotland) Regulations 2003	Scotland	6
Landfill Tax (Scotland) Act 2014	Scotland	6
Pollution Prevention and Control (Scotland) Regulations 2012	Scotland	1, 4, 5, 6
Special Waste (Scotland) Regulations 1996	Scotland	6
The Surface Waters (Abstraction for Drinking Water) (Classification) (Scotland) Regulations 1996	Scotland	5
Water Supply (Water Quality) (Scotland) Regulations 2001	Scotland	5
Air Quality (Wales) Regulations 2000	Wales	4
Air Quality Standards (Wales) Regulations 2010	Wales	4
Contaminated Land (Wales) Regulations 2006	Wales	6
List of Wastes (Wales) Regulations 2005	Wales	6
Water Supply (Water Quality) Regulations 2010	Wales	5

***European and other international statutory instruments***

<b>Legislation</b>	<b>Country</b>	<b>Element/s</b>
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 22 March 1989 <a href="#">Link to Basel Convention</a>	United Nations	6
Convention on Environmental Impact Assessment in a Transboundary Context, UN Economic Commission for Europe <a href="#">Link to environmental impact checklist</a>	United Nations	3
Convention on Wetlands of International Importance, Ramsar 1971	United Nations Convention	1
Directive 94/62/EC on packaging and packaging waste, 20 December 1994 and amendments	European Directive	6
Directive 1999/31/EC on the landfill of waste, 26 April 1999	European Directive	6
Directive 2000/60/EC establishing a framework for Community action in the field of water policy	European Directive	1, 5
Directive 2002/49/EC relating to the assessment and management of environmental noise, 25 June 2002	European Directive	8

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<b>Legislation</b>	<b>Country</b>	<b>Element/s</b>
Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators, 6 September 2006 and amendments	European Directive	6
Directive 2008/50/EC on ambient air quality and cleaner air for Europe, 21 May 2008	European Directive	4
Directive 2008/98/EC on waste	European Directive	1, 6
Directive 2010/31/EU on the energy performance of buildings, 19 May 2010	European Directive	7
Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control), 24 November 2010	European Directive	1, 3, 4, 5, 6
Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment, 8 June 2011	European Directive	6
Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances (Seveso III)	European Directive	1, 2, 3, 9
Framework Convention on Climate Change (Kyoto Protocol) and subsequent amendments	<a href="#">Link to Kyoto Protocol</a>	1
Geneva Convention on Long-range Transboundary Air Pollution, 1979 and associated Protocols	<a href="#">Link to Geneva Convention</a> <a href="#">Link to Geneva Convention Protocols</a>	4
Montreal Protocol on Substances that Deplete the Ozone Layer and subsequent adjustments	United Nations <a href="#">Link to Montreal Protocol</a>	1
Paris Climate Conference (COP21)	<a href="#">Link to COP21</a>	1
Regulation (EC) No 1013/2006 of shipments of waste, 14 June 2006	European Regulation	6
Regulation (EC) No 1221/2009 on the voluntary participation by organisations in a Community eco-management and audit scheme	European Regulation <a href="#">Link to EMAS</a>	2

**Other relevant UK source references**

<b>Reference title</b>	<b>Reference detail eg ISBN number</b>	<b>Element/s</b>
Approved Documents L2A and L2B of the Building Regulations 2010.	<a href="#">Link to Approved Documents L2A and L2B</a>	7
BS 5228:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Part 1 relates to noise and Part 2 relates to vibration	ISBN: 978-0-5807-7749-3	8
BS 8555:2003 EMS. Guide to the phased implementation of an environmental management system including the use of environmental performance evaluation	British Standards Institute (BSI), ISBN: 978-0-580-41471-X	2, 3, 4
Causes of air pollution	Department for Environment Food & Rural Affairs <a href="#">Link to causes of air pollution</a>	4
How to store oil, including design standards for different types of container, and how to protect your tank	Environment Agency guidance <a href="#">Link to how to store oil</a>	5

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Reference title	Reference detail eg ISBN number	Element/s
Guidance on the implementation of the Water Supply (Water Quality) Regulations 2000 (as amended) in England	Drinking Water Inspectorate, Guidance Document <a href="#">Link to water quality guidance</a>	5
International Law & The Environment, Birnie, Boyle & Redgwell, third edition	Oxford University Press, ISBN: 978-0-19-876422-9	1
Storing oil at our business, Environment Agency guidance	<a href="#">Link to storing oil at your business</a>	5
The Control of Major Accident Hazards Regulations 2015, Guidance on Regulations, L111	HSE Books, ISBN: 978-0-7176-6605-8 <a href="#">Link to L111</a>	1, 2, 3, 9
UK Air Pollutants, Key facts and monitoring data	Environment Agency <a href="#">Link to UK Air Pollutants</a>	4

**Other relevant international source references**

Reference title	Reference detail eg ISBN number	Element/s
Agenda 21, United Nations Conference on Environment and Development	<a href="#">Link to Agenda 21</a>	1, 6
Air Quality Guidelines	World Health Organisation, <a href="#">Link to Air Quality Guidelines</a>	4
EMEP/EEA air pollutant emission inventory guidebook – 2013	<a href="#">Link to Inventory Guidebook</a>	4
Environmental management, The ISO 14000 family of International Standards	International Standards Organization (ISO), ISBN: 978-92-67-10500-0 <a href="#">Link to ISO 14000 family</a>	2
European Commission, batteries and accumulators website	<a href="http://ec.europa.eu/environment/waste/batteries/index.htm">http://ec.europa.eu/environment/waste/batteries/index.htm</a>	6
European Commission, climate action website	<a href="http://ec.europa.eu/clima/index_en.htm">http://ec.europa.eu/clima/index_en.htm</a>	7
European Commission, restriction of hazardous substances in electrical and electronic equipment website	<a href="http://ec.europa.eu/environment/waste/rohs_eee/legis_en.htm">http://ec.europa.eu/environment/waste/rohs_eee/legis_en.htm</a>	6
European Commission, waste website (including information on Directive 1999-31-EC)	<a href="http://ec.europa.eu/environment/waste/landfill_index.htm">http://ec.europa.eu/environment/waste/landfill_index.htm</a>	6
Groundwater quality protection, a guide for water utilities, municipal authorities and environment agencies	The World Bank, ISBN: 0-8213-4951-1 <a href="#">Link to groundwater quality protection</a>	5
Guidelines for drinking-water quality, fourth edition	World Health Organisation <a href="#">Link to drinking water guidelines</a>	5
ISO 50001:2011 Energy Management Systems	ISO	7
Introduction to Environmental Impact Assessment, (4th edition), Glasson, Therivel and Chadwick	Routledge, ISBN: 978-0-415-66470-7	3
ISO 14001:2015 – Environmental Management Systems	ISO, ISBN: 978-0-5808-2611-5	2, 3, 4
ISO 14005:2010 – EMS, guidelines for the phased implementation of an environmental management system, including the use of environmental performance evaluation	ISO	2
ISO 14040:2006 – Environmental management, life cycle assessment, principles and framework	ISO	3

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<b>Reference title</b>	<b>Reference detail eg ISBN number</b>	<b>Element/s</b>
ISO 14044:2006 – Environmental management, life cycle assessment, requirements and guidelines	ISO	3
ISO 14064 series on reporting of greenhouse gas emissions	ISO 14064-1:2006 ISO 14064-2:2006 ISO 14064-3:2006	2
ISO 19011:2011 – Guidelines for auditing management systems	ISO, ISBN: 978-0-580-77524-6	2
Intergovernmental Panel on Climate Change (IPCC) -	Various scientific reports <a href="#">Link to IPCC website</a>	1
Noise Pollution	<a href="http://www.encyclopedia.com/topic/noise_pollution.aspx">http://www.encyclopedia.com/topic/noise_pollution.aspx</a>	8
Ospar Commission website	<a href="#">Link to Ospar website</a>	1
Rio Declaration on Environment and Development, 1992	<a href="#">Link to Rio Declaration</a>	1
Services to support Member States' enforcement actions and inspections concerning the application of EU waste legislation - Guidance on permitting and inspection	07030/2010/576173/SER/C2, <a href="#">Link to permitting and inspection guidance</a>	6
The Vienna Convention for the Protection of the Ozone Layer	<a href="#">Link to Vienna Convention</a>	1
UNEP Clearing the Waters, a focus on water quality solutions	<a href="#">Link to clearing the waters</a>	5
UNEP Solid Waste Management Volumes 1 and 2	<a href="#">Solid Waste Management Vol 1</a>	
UNEP Year Book	<a href="#">Link to UNEP Year Book</a>	1
UN Water Policy Brief	<a href="#">Link to UN Water Policy Brief</a>	5

## **5.2 Unit EC2: Environmental practical application**

### **Learning outcomes**

- Demonstrate the ability to apply the knowledge and understanding gained from the study of elements of Unit EC1 in a practical environment
- Carry out an environmental review of a workplace and complete a report to management regarding the review with recommendations.

### **Content**

This unit contains no additional syllabus content. However, completion of study for unit EC1 is recommended in order to undertake the unit EC2 practical application.

#### **4.2.1 Purpose and aim**

The aim of the practical application for the Certificate in Environmental Management is for candidates to demonstrate the ability to apply knowledge of the EC1 syllabus, by successful completion of an environmental review of a workplace using the NEBOSH Environmental Review Proforma.

The candidate is then expected to complete a report to management regarding the review with recommendations, using the NEBOSH Environmental Review Report template. The proforma and report should clearly identify:

- the nature and location of each environmental issue
- the degree of risk associated with the environmental issue
- preventative and protective environmental measures already in place
- the remedial actions, where appropriate, with relevant prioritisation.

#### **4.2.2 Marking**

Practical applications will be marked by an internal assessor – a person proposed to NEBOSH by an accredited course provider and approved by NEBOSH. Internal assessors will normally hold Full Membership of the Institute of Environmental Management and Assessment (IEMA), or equivalent, and/or the NEBOSH National Diploma in Environmental Management (or equivalent) with relevant experience.

A marking sheet will be completed by the internal assessor for each candidate and attached to the candidate's report. The total percentage mark for each candidate will be transferred to a results sheet and returned to NEBOSH by no later than 15 working days after the examination date of EC1 and/or EC2.

Candidates must achieve the pass standard (60%) in this unit in order to satisfy the criteria for the qualification.

### 4.2.3 Assessment location

The environmental review must be carried out in the candidate's own workplace. Where the candidate does not have access to a suitable workplace, the accredited course provider should be consulted to help in making arrangements for the candidate to carry out the review at suitable premises. Providers seeking to run the practical unit in this way should contact NEBOSH for advice and approval.

Candidates do not require supervision when carrying out the practical application, but the candidate must sign a declaration that the practical is their own work.

The candidates, employers and internal assessors should be aware that the status of the environmental review undertaken to fulfil the requirements of unit EC2, which is **for educational purposes only**. It *does not* constitute an assessment or review for the purposes of any legislation or regulations.

### 4.2.4 Submission of completed work

Assessment of the practical unit (EC2) must normally take place within 10 working days of (before or after) the date of the EC1 written papers (the 'date of the examination'). The results sheet completed by the accredited course provider must reach NEBOSH by no later than 15 working days after the date of the examination.

Any practical application not submitted by this deadline will be declared at zero marks. The candidate will then be required to re-register (and pay the registration fee) at the next standard (or on demand) sitting date.

If a candidate is absent from the written papers because of illness corroborated by a doctor's note, but successfully completes the EC2 unit within the 10 working day deadline, the result will stand. If a candidate is unable to complete the EC2 unit under similar circumstances, NEBOSH may allow it to be taken at a later date beyond the normal 10 working day deadline.

### 4.2.5 Further information

Further detailed information regarding the unit EC2 including forms and mark schemes can be found in a separate guidance document for candidates and accredited course providers available from the NEBOSH website ([www.nebosh.org.uk](http://www.nebosh.org.uk)): *"Unit EC2: Environmental practical application: Guidance and information for accredited course providers and candidates"*.

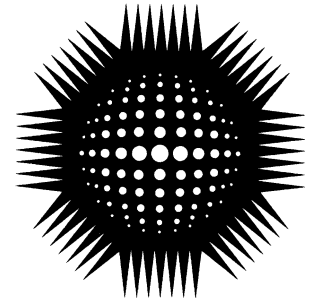


## 6. Sample examination paper

### 6.1 Unit EC1: Management and control of environmental hazards

THE NATIONAL EXAMINATION BOARD IN  
OCCUPATIONAL SAFETY AND HEALTH

NEBOSH CERTIFICATE  
IN ENVIRONMENTAL MANAGEMENT



**nebosh**

UNIT EC1: MANAGEMENT AND CONTROL OF ENVIRONMENTAL  
HAZARDS

[DATE]

2 hours, 0930 to 1130

Answer both Section 1 and Section 2. Answer ALL questions.

The maximum marks for each question, or part of a question, are shown in brackets.

Start each answer on a new page.

Answers may be illustrated by sketches where appropriate.

This question paper must be returned to the invigilator after the examination.

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#### SECTION 1

You are advised to spend about **half an hour** on this section, which contains **ONE** question.

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- 1 (a) **Identify FOUR** common air pollutants **AND outline** the effects of **EACH** on people and/or the environment. (8)
- (b) (i) **Outline** the main features and underlying principles of **FOUR** types of air pollution control device. (8)
- (ii) **Identify** the type of emissions that would be appropriate for **EACH** of the above air pollution control devices. (4)

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## SECTION 2

You are advised to spend about **one and a half hours** on this section, which contains **TEN** questions.

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- 2**      **Describe** the main features of a BS EN ISO 14001:2015 environmental management system. **(8)**
- 3**      (a)      **Give** the meaning of the term '*active monitoring*'. **(2)**
- (b)      **Outline**, with examples, information sources that may be used in active monitoring. **(6)**
- 4**      Life cycle analysis (LCA) is growing in importance in environmental management.
- (a)      **Outline** the principles and key stages of LCA. **(4)**
- (b)      **Outline TWO** situations where an LCA study may be of benefit. **(4)**
- 5**      During a routine inspection of a transport yard, a manager has observed oil floating on the surface of a small stream that runs alongside the yard. The oil is immediately downstream of a surface water discharge drain in the transport yard.
- Outline** the checks that the manager should make in the initial investigation of this incident. **(8)**
- 6**      **Identify** the different pathways through which contaminated land may affect human and other environmental receptors. **(8)**
- 7**      (a)      **Outline** benefits associated with the use of hydropower. **(4)**
- (b)      **Outline** limitations associated with the use of hydropower. **(4)**
- 8**      (a)      **Outline** the potential sources of noise that would be associated with the *construction* of a new airport. **(6)**
- (b)      **Identify** the potential environmental effects of the noise. **(2)**

- 9      **Outline** why deforestation is seen as an environmental concern.      **(8)**
- 10     **Outline** the importance of sustainable development **AND give** examples of how sustainability can be achieved.      **(8)**
- 11     BS EN ISO 14001:2015 requires organisations to identify both environmental aspects and environmental impacts.
- (a)    **Give** the meaning of the terms:
- (i)    environmental aspect;      **(2)**
- (ii)   environmental impact.      **(2)**
- (b)    **Identify FOUR** possible environmental aspects of a coal-fired power station.      **(4)**