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# **Guide** to the NEBOSH International Diploma in Environmental Management



nebosh





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# Guide to the NEBOSH International Diploma in Environmental Management (September 2016 specification)

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## **1.0 Introduction**

The NEBOSH International Diploma in Environmental Management is designed for individuals with responsibilities for environmental management. It provides specialist knowledge on issues such as environmental management systems, sustainability and pollution prevention and control. It also provides a sound basis for progression to further study to MSc level.

The International Environmental Diploma will be invaluable for managers taking on environmental responsibilities and those aiming to develop and implement effective environmental management systems within their organisations. The International Diploma in Environmental Management has been based on the National Diploma in Environmental Management; the two qualifications share a 'common' examination unit. Since its launch in 1992, over 2900 candidates have achieved the National Diploma in Environmental Management.

### **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 management, 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).

The importance of climate change is now widely recognised around the globe. The agreement of the 21st session of the Conference of the Parties (COP21) in Paris was a landmark universal agreement by all UN Member States to reduce emissions and keep global warming below 2°C compared with the 'preindustrial era' (circa 1850s). To achieve this result it is essential that organisations around the globe understand their environmental impacts in relation to climate change and what they can do to control this.

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. Good environmental management is also often driven down through supply chains with many companies only dealing with other organisation who can evidence how they manage their environmental aspects; this is often achieved by the implementation and maintenance of a recognised environmental management system such as ISO 14001:2015.

The business impact of environmental incidents is also compelling: in addition to the direct cost of pollution clean-up, 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.

Figures produced by the United Nations make a compelling reason for managing environmental performance; for example:

- without action the world's average surface temperature is projected to rise during the 21<sup>st</sup> century and is likely to exceed a 3°C rise;
- between 1880 and 2012 the average global temperature has increased by 0.85°C;

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- global emissions of carbon dioxide have increased by almost 50% since 1990;
- by 2030 the world is projected to face a 40% global water deficit under the current 'business as usual' approach;
- an estimated 20% of the world's aquifers are being over exploited;
- since 1992, floods, droughts and storms have affected 4.2 billion people (95% of people affected by all disasters); the cost of this damage is estimated to be US\$1.3trillion;
- since 1970 there has been a 30% decline in biodiversity health;
- land based sources (such as agricultural run-off) account for approximately 80% of marine pollution;
- excessive nutrients from sewage outfalls and agricultural run-off have created around 500 dead zones, which equates to an area equivalent to the surface of the United Kingdom (dead zones are areas with low oxygen and cannot support marine life which results in the collapse of some ecosystems);
- over 220 million tons of plastic are produced each year; it is estimated that every square mile of ocean contains 46000 pieces of floating plastic.

The sustainability agenda is also at the top of many organisations' priorities and, thanks to the increasing use of social media, is a subject that more people are becoming aware of. The UN has recently published 17 'Sustainable Development Goals' which they aim to achieve by 2030. The goals include 'responsible consumption and production' (goal 12) along with other goals such as providing clean water, protecting the aquatic environment and climate change. The Sustainable Development Goals can be found at this link <https://sustainabledevelopment.un.org/?menu=1300>.

The figures provided above, although a global instead of an organisational problem, illustrate the extent of the issues associated with poor environmental management. With the sustainability agenda firmly set and the growth of supply chain management, organisations can only benefit from managing their environment performance effectively. By employing environmental practitioners who hold the NEBOSH International Diploma in Environmental Management organisations can demonstrate a professional level of environmental assurance to all of its stakeholders.

The NEBOSH International Diploma in Environmental Management can be delivered within an organisation, or employees can attend accredited training courses run 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 Designatory letters**

Holders of the NEBOSH International Diploma in Environmental Management may use the designatory letters 'IEnvDipNEBOSH' after their name.

## **1.3 Professional membership**

The NEBOSH International Diploma in Environmental Management meets the academic requirements for Practitioner Membership (PIEMA) of the Institute of Environmental Management and Assessment (IEMA).

It is additionally accepted by the International Institute of Risk and Safety Management (IIRSM - [www.iirsm.org](http://www.iirsm.org)) as meeting the academic requirements for Specialist membership (SIIRSM).

In addition, diplomates will have the opportunity to attend the annual NEBOSH Diploma Graduation ceremony.

## **1.4 Qualification level and UK accreditation**

The NEBOSH International Diploma in Environmental Management (September 2016 specification) is accredited and credit rated by the Scottish Qualifications Authority (SQA) Accreditation (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.sqcf.org.uk](http://www.sqcf.org.uk)) at SCQF Level 10 with 23 SCQF credit points.

For users in England, Wales and Northern Ireland, this is comparable to a Vocationally-Related Qualification (VRQ) at Level 6 within the Regulated Qualifications Framework (RQF) and Qualifications and Credit Framework (QCF), or Honours Degree standard.

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

## **1.5 Key topics covered**

- Environmental leadership
- Environmental management systems
- Sustainability
- Pollution prevention and control.

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

<b>Unit ED1:</b> 90 hours tuition and 40 hours private study	<b>Total: 119 hours</b>
<b>Unit IDEM2:</b> 29 hours tuition and 72 hours private study	<b>Total: 112 hours</b>

A programme of study therefore needs to be based around a minimum of **119 taught hours** and approximately **112 hours of private study** for an overall total of **231 Hours**.

Tuition time should normally be allocated proportionate to the tuition time for each element, but may be adjusted to cover the needs of each student group.

Quoted hours *do not* include assessment time, ie, sitting written examinations.

## **1.7 Entry requirements**

There are no specific barriers, in terms of academic qualifications, skills or experience for entry to the NEBOSH International Diploma in Environmental Management programme. However, it should be noted that the assessments are offered, and must be answered, in English only.

The qualification includes a requirement to complete an assignment which will involve research into environmental issues with the candidate’s workplace and the completion of a report to top management; the research and report must be completed in English. Candidates should discuss this with the accredited course provider before undertaking the qualification.

## **1.8 Minimum standard of English required for students**

The standard of English required by students studying for the NEBOSH International Diploma in Environmental Management must be such that they can both understand and articulate the

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concepts contained in the syllabus. It is important to stress that it is the responsibility of accredited course providers to determine their students' standards of proficiency in English.

NEBOSH recommends that students undertaking this qualification should reach a minimum standard of English *equivalent* to an International English Language Testing System score of **7.0** or higher in order to be accepted onto an International Diploma programme.

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).

Students wishing to assess their own language expertise may consult the IELTS website for information on taking the test: <http://www.ielts.org/faqs.aspx>.

## **1.9 Legislation**

The syllabus refers to multilateral treaties and best practice. Where this qualification is delivered overseas, accredited course providers may refer to examples of local legislation as part of the course programme.

## **1.10 Legislative updates**

Relevant new multilateral treaties and/or best practice applicable to Unit IDEM2 will become assessable in detail six months after their date of introduction. However, students will be expected to be essentially up-to-date at the time of the assessment and, whilst a detailed knowledge will not be expected, reference to new or impending treaties, where relevant to the candidate's organisation, will be given credit.

**NB:** Accredited course providers are expected to ensure their course notes remain current with regard to new international conventions and recommendations.



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

The syllabus is mapped to the relevant National Occupational Standard (NOS). The mapping of the syllabus against each of the above standards can be found on pages 13-14.

## **1.12 Qualification type**

NEBOSH offers 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 combines 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.

In Scotland, VRQs are known as 'Other accredited qualifications'.

## **1.13 Qualification progression**

International Diploma in Environmental Management holders with health and safety responsibilities may wish to take the NEBOSH International Diploma in Occupational Health and Safety.

Candidates who wish to continue their studies in the UK may wish to consider the NEBOSH National Diploma in Environmental Management. Unit ED1 is a 'common unit' and forms part of the National and International Environmental Diplomas. Therefore, students who wish to study the National Environmental Diploma will only need to pass one additional unit to achieve this further qualification.

Candidates who have achieved the NEBOSH International Diploma in Environmental Management may be considering further environmental management study. NEBOSH has entered into partnership with the University of Hull to offer a range of Masters Degrees.

## **1.14 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:** Students are advised to check up-to-date information on course dates directly with accredited course providers. It is also recommended that students contact only accredited course providers which appear on the NEBOSH website; this ensures that the accredited course providers have met NEBOSH's quality standards.

## **1.15 Examination dates**

'Standard' examination dates for this qualification are available annually in January and July. Unit IDEM2 assignment submission dates are available annually in February, May, August and November.

'On-demand' examinations are **not** available for this qualification.

## **1.16 Specification date**

This specification (September 2016) of this qualification is the first specification; it will become examinable from (and including) January 2018.

## **1.17 Syllabus development and review**

The syllabus has been developed by NEBOSH following extensive consultation with key stakeholders, notably previous Diploma students, 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.

## **1.18 Further information for students**

Further information for students, including a qualification overview leaflet and a sample examiners' report, can be found via the NEBOSH website ([www.nebosh.org.uk](http://www.nebosh.org.uk)).

## **1.19 Further information for accredited course providers**

Further information for accredited course providers, including policies and procedures and guidance regarding the Unit IDEM2 assignment, can be found in the accredited course providers' section of the NEBOSH website.

## **2.0 Qualification structure**

### **2.1 Student enrolment**

- At the start of their studies, students will enrol with NEBOSH. The enrolment period is 5-years.
- On completion of the first successful unit, the enrolment start date will change to the same as the declaration date (the date which appears on the unit certificate) of the successful unit. The student will then have 5-years from this new date to achieve the qualification.
- All units will have a 5-year validity period. Units which are older than 5-years will no longer be valid and will not count towards the qualification grading. As there are only two units making up the qualification, once the successful unit has expired, the enrolment period will also expire.
- The student's enrolment period will also end:
  - when the student has successfully completed both units; or
  - 5-years from the enrolment start date if the student has not attempted any unit assessment; or
  - 5-years from the enrolment start date if unit assessment/s have been attempted but the student has received a 'Refer' result and/or has been marked as 'absent'.
- If a student cannot complete both units within the 5-year completion time-frame they may apply for a unit validity extension for each affected unit. Please refer to the 'Enrolment Policy for NEBOSH Diploma Level Qualifications' for further information.

### **2.2 Unit assessments**

The International Diploma in Environmental Management is divided into two units. Both units are mandatory and there are no optional units. The student may choose to take the units together or at different times.

#### **Unit ED1: Controlling environmental aspects**

- Unit ED1 is a taught unit which is assessed by a 3-hour written examination
- The written examination consists of eight 'long-answer' questions (20 marks each); candidates choose which five questions to answer out of the eight
- Student scripts are marked by external examiners appointed by NEBOSH
- A sample examination question paper can be found in Section 6.

#### **Unit IDEM2: Environmental regulation**

- Unit IDEM2 consists of a written assignment set by NEBOSH
- The report should be approximately 8000 words in total, excluding the references, bibliography and appendices. No penalty will be applied to reports which exceed 8000 words but students should aim to keep their word count under 12000
- Submission dates for Diploma assignments are in February, May, August and November each year
- The assignment is marked by external examiners appointed by NEBOSH.

For more information on the assessment feedback provided for this qualification, please visit the NEBOSH website: <https://www.nebosh.org.uk/faqs/how-can-i-gain-feedback-on-my-performance-to-assist-with-future/>

## **2.3 Common unit and exemption**

The NEBOSH International Diploma in Environmental Management shares a 'common unit' (Unit ED1) with the NEBOSH National Diploma in Environmental Management. Students will, therefore, only be required to pass one additional unit (Unit NDEM2) to gain a further qualification.

The 'common unit' can be used as an exemption against the National Diploma in Environmental Management for up to five years after the declaration date (the date printed on the unit certification) of Unit ED1. Likewise, holders of the National Diploma in Environmental Management will have five years to use their Unit ED1 pass as an exemption against the same unit for the International Diploma in Environmental Management.

## **2.4 Assessment setting and marking**

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.

## **2.5 Unit pass standards**

The provisional pass mark is 45% for the written paper (Unit ED1). More information on how provisional marks are set can be found in our FAQs: <https://www.nebosh.org.uk/faqs/how-does-nebosh-set-the-pass-mark-for-each-assessment/>

The pass mark for the assignment unit (Unit IDEM2) is 50%.

## **2.6 Unit certificates**

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

## **2.7 Qualification grade**

When a pass has been achieved in both units (Unit ED1 and IDEM2), the mark achieved for each of the units are added together and a final grade is awarded as follows:

<b>Distinction</b>	135 or more
<b>Credit</b>	115 – 134
<b>Pass</b>	95 – 114

## **2.8 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. A qualification parchment will be issued within 40 working days of the unit result declaration date for the second successfully completed unit.

However, once the result of the second successfully completed unit has been issued the student 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; or
- submit an Enquiry About Result (EAR) request (see Section 3.3).

Either of these action will delay the issue of the qualification parchment until the relevant process has completed.

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

If a student's performance in any unit is lower than a 'Pass', the student may re-sit the unit/s in which they have been unsuccessful providing that this happens within the 5-year completion period. However, each re-sit will incur an additional fee.

Students may re-sit units at any time within their enrolment period. This includes re-sitting successful unit/s to try to improve the qualification grade. When all four units have been successfully completed, students will need to inform NEBOSH of their intention to re-sit the successful unit/s **within 20-working days of the date of the results issue for the second unit**. There is no limit to the number of re-sits which can be taken within the enrolment period.

If a re-sit results in a lower mark than a previously declared mark for that unit, the highest mark will be used when calculating the qualification grade.

For the Unit IDEM2 assignment, there is no limit to the number of submissions within the completion period. If a student gains lower than the pass standard in the assignment, they may revise and submit the assignment again. However, they must re-register for the assignment in order to do so. Please note that no feedback will be given on the referred assignment and each additional submission will incur a fee. Marks awarded for subsequent submissions will not be capped.

If a student registers for any unit of the International Diploma whilst awaiting a result from a previous sitting of an examination that student may not seek a refund of the registration fee if they retrospectively claim exemption for that unit except in the case of an Enquiry About 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 examination. They allow attainment to be demonstrated by students with either a permanent or long-term disability or learning difficulty, or temporary disability, illness or indisposition.

Accredited course providers must make requests to NEBOSH for access arrangements or reasonable adjustments 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 a student who has been unable to demonstrate attainment because of temporary illness, injury, indisposition or an unforeseen incident at the time of the assessment.

Students who feel they have been 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 the assignment) before leaving the examination room. They must 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 review and check assessment results before they are issued. This includes a particular review of borderline results. This ensures that the declared results are a fair and equitable reflection of the standard of performance by students.

There are, however, procedures for students 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 students 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. These include collusion or use of unauthorised material by students, the failure to maintain appropriate records or systems by accredited course providers, and 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.

Unit IDEM2 (the assignment unit) also contains taught content. This content relates to the regulation of the environment. Although this is specific content for this unit, the content can be taught at the same time as the corresponding part of the syllabus for Unit ED1. For example, when teaching content around waste management, tutors may choose to teach the legislation relating to this topic along with the 'control' content contained in Unit ED1.

### **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 International Environmental Diploma 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 - NEBOSH International Diploma in Environmental Management (September 2016 specification)**

### **Structure**

The qualification is divided into two units; Unit ED1 is further divided into 12 elements and Unit IDEM2 into two elements.

The matrix below indicates how the syllabus elements map to the relevant units of the National Occupational Standards (See also section 1.11):

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

### **Unit ED1: Controlling environmental aspects**

<b>Element number and title</b>	<b>Recommended tuition hours</b>	<b>Relevant Lantra units</b>	<b>Page number</b>
1 Key environmental cycles and the effects of human activity on the environment	6	EM4, EM15	15
2 Environmental leadership	4	EM3, A2, E9	17
3 Environmental management systems and emergency planning	8	EM1, 2, 3, 4, 5, 6, 8, 15, TTS015, E9	19
4 Environmental risk evaluation and control	14	EM1, 2, 3, 5, 11, 12, 13, 15, TTS015, E9	22
5 Environmental performance evaluation	7	EM5, 6, 7, 8, 10	25
6 Sustainability	7	EM8, 15, E9	26
7 Waste management	8	EM6, 8, 15, E9	28
8 Managing emissions to the atmosphere	8	EM6, 8, 15, E9	30
9 Managing emissions to controlled waters	8	EM6, 8, 15, E9	32
10 Control of environmental noise	5	EM15	35
11 Hazardous substances and contaminated land	7	E9	36
12 Energy use	8	EM9, 10, 15, E9	38
<b>Total taught hours</b>	<b>90</b>		
<b>Total self-study hours</b>	<b>40</b>		

## **Unit IDEM2: Environmental regulation**

<b>Element number and title</b>	<b>Recommended tuition hours</b>	<b>Relevant Lantra units</b>	<b>Page number</b>
1 Enforcement of environmental legislation	6	EM4, 15, TTS015	40
2 Pollution prevention and control legislation	18	EM1, 2, 3, 4, 5, 15, E9	42
Tutor preparation	5	N/A	N/A
<b>Total taught hours</b>	<b>29</b>		
<b>Total self-study hours</b>	<b>72</b>		
<b>Qualification taught hours</b>	<b>119</b>		
<b>Qualification self-study hours</b>	<b>112</b>		
<b>Overall hours</b>	<b>231</b>		

## **5.1 Unit ED1: Controlling environmental aspects**

### **Aim of the unit**

This unit provides students with a thorough grounding in environmental management. It aims to prepare students for a career in environmental management by providing them with the ability to apply their knowledge and understanding of environmental management issues in the workplace. In addition this knowledge and understanding prepares students for the written question paper assessment for Unit ED1 and the practical application (Unit NDEM2) which will be carried out in their own workplace.

### **Element 1: Key environmental cycles and the effects of human activity on the environment**

#### **Learning outcomes**

- 1.1 Explain the meaning of the environment and the earth's key natural cycles
- 1.2 Explain the general effects that human activity has on the environment (including understanding of key terminology)
- 1.3 Outline the purpose of the Principles 15 and 16 made under the Rio Declaration on Environment and Development (1992)
- 1.4 Outline the role of non-governmental bodies and the media in influencing common environmental standards in a global economy.

#### **Content**

##### **1.1 The environment and key natural cycles**

- Meaning of the environment with reference to ISO 14001:2015
- Carbon cycle
  - the effects the carbon cycle has on climate change
  - pollution risks associated with fuel extraction ie, coal mining, drilling and transport of oil, hydraulic fracturing "fracking"
- Nitrogen and phosphorus cycles; how they can add to the problem of eutrophication
- Hydrological cycle.

##### **1.2 General effects of human activity on the environment**

- The meaning of ecology
- The meaning of ecosystem
- The meaning and importance of biodiversity
- Effects and impacts of human activity on flora, fauna and natural systems:
  - composition and dynamics of communities and ecosystems
  - effects of bioaccumulation and bio-concentration

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- effects of deforestation on the environment and communities
- effects of desertification
- effects of soil erosion
- habitat destruction
- The impact of flora and fauna on areas of the environment where they were previously absent ie, invasive species
- Effects on protected flora and fauna ie, use of permits/permissions for the removal of endangered flora and/or fauna
- Priorities given to listed species/endangered animals.

**1.3 Principles 15 and 16 of the Rio Declaration on Environment and Development (1992)**

- In relation to all types of pollution, the purpose of the following Principles made under the 'Rio Declaration':
  - Principle 15 (precautionary approach)
  - Principle 16 (polluter pays).

**1.4 The role of non-governmental bodies and the media**

- Relevant influential parties and their role influencing common environmental standards in a global economy: employer bodies; trade associations; trade unions; professional bodies (IEMA, CIWEM etc); pressure groups, the public etc
- The importance of the media in a global economy and their role in changing attitudes to environmental management.

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

## **Element 2: Environmental leadership**

### **Learning outcomes**

- 2.1 Explain the reasons for improving environmental and social performance
- 2.2 Explain the importance of leadership with regards to an organisation's environmental performance
- 2.3 Outline the importance of personal ethics and professional practice to the environmental practitioner
- 2.4 Outline how the environmental practitioner can manage and maintain their levels of competence
- 2.5 Outline how levels of competence can be managed by an organisation.

### **Content**

#### **2.1 Reasons for improving environmental and social performance**

- Moral
  - differing global community attitudes to the value of the environment
  - the need to prevent/minimise the impact of an organisation's activities on the environment
  - precautionary principle (also see Element 1.3)
  - sustainability drivers
- Legal
  - local (country specific) legislation, regional legislation (ie, directives), international treaties
- Economic
  - polluter pays principle (also see Element 1.3)
  - costs associated with environmental incidents ie, legal costs, fines/sanctions, clean-up costs, remediation works
  - the business case for good environmental management
  - supply chain pressures / stakeholder expectations
  - corporate social responsibility
  - cost savings (energy usage, waste segregation/recycling/reusing/resource efficiency etc).

#### **2.2 Environmental leadership**

- Significance of commitment and accountability for environmental management and sustainable business practices from all levels and functions within an organisation
- Importance of determining and providing adequate resources for the establishment, implementation and maintenance of an environmental management system
- The reasons for integrating environmental management into all relevant business processes
- Ownership for the effective control, monitoring and review of an organisations environmental aspects/impacts and protective measures

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- Communicating to stakeholders the importance of continued improvement in environmental performance
- The promotion of a strong environmental culture
- Leadership commitments in relation to the implementation and maintenance of an environmental management system certification such as ISO 14001:2015.

**2.3 Ethics and professional practice**

- Ethics and professional practice and how they should be applied to all activities with reference to relevant professional bodies' codes of conduct.

**2.4 Maintenance and management of the environmental practitioner's competence**

- Recognition and maintenance of personal competence:
  - recognising limits of own competence
  - advising employers or other relevant parties of the level of their own competence
  - carry out additional learning when required
  - keeping up-to-date with environmental change
  - encouragement and mentoring of others
  - use of continuing professional development schemes and reflective learning.

**2.5 Managing competence in an organisation**

- Definition of competence "*Ability to apply knowledge and skills to achieve intended results*" (ISO14001:2015)
- The requirement to manage competence as part of recognised standards, ie ISO14001:2015
- The use of competence within the organisation to support legal compliance
- Recognition of competence levels within the organisation (use of skills maps, competency frameworks)
- Importance of competence checks of workers/contractors working for the organisation where the organisation's environmental performance could be affected
- Arrange for training to acquire necessary competence and evaluate the training undertaken
- Promotion of mentoring schemes
- Retention of records.

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

## **Element 3: Environmental management systems and emergency planning**

### **Learning outcomes**

- 3.1 Explain the purpose, benefits, limitations and structure of an environmental management system
- 3.2 Outline methods of presenting information on environmental management performance, including communication to stakeholders, and the use of benchmarking
- 3.3 Outline the need for environmental policies, procedures and systems of work and how these would be implemented by an organisation
- 3.4 Outline the need for managing contractors' environmental performance
- 3.5 Outline the requirements of emergency plans for an organisation, including their development, monitoring and maintenance.

### **Content**

#### **3.1 Environmental management systems (EMS)**

- Purpose of an environmental management system
- Benefits and limitations of introducing an EMS into an organisation
- Differences between environmental management systems: ISO 14000 series and Eco Management and Audit Scheme (EMAS)
- Structure of an EMS (ISO 14001:2015)
  - Planning
  - Support
  - Operation
  - Performance evaluation
  - Improvement
- Factors to consider in implementing an EMS
  - context of an organisation
  - leadership
    - leadership and commitment
    - development of an environmental policy
    - organisational roles and responsibilities
  - planning
    - environmental aspects / impacts inclusive of lifecycle perspective
    - compliance obligations
      - identify and have access to the compliance obligations related to any environmental aspects present;
      - have determined how the compliance obligations identified apply
    - actions to address risks and opportunities
    - environmental objectives
  - support
    - communication (including communication of aspects/impacts to relevant stakeholders)

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- resources
- competences and awareness
- control of documented information
- performance evaluation
  - monitoring, measurement and evaluation
  - management review
- improvement opportunities
  - nonconformity and corrective action
- Benefits and limitations of integrating quality, environmental, and health and safety management systems.

### **3.2 Presentation of information on environmental management performance**

- Internal and external sources of information on environmental performance
  - collection, provision and analysis of data
- Presentation and retention of data in an appropriate format
- Development and content of corporate reports on environmental performance
- Communication of data to internal and external stakeholders
- Benchmarking and the use of indicators.

### **3.3 Environmental policies, procedures and systems of work**

- Need to include environmental issues in policies (ie, procurement policy), procedures and systems of work
- Implementing environmental policies, procedures and systems of work
- Integration of environmental and health and safety policies, procedures and systems of work
- Training and information for all workers on the organisation's environmental policies, procedures and systems of work
- Dealing with complaints from workers and other parties regarding environmental issues.

### **3.4 The principles of assessing and managing contractors**

- Scale of contractor use
- Pre-selection of contractors including provision of environmental information on the organisation's aspects and impacts
- Managing of contractors' environmental performance
- Contractor responsibilities in relation to their environmental performance.

### **3.5 Development, monitoring and maintenance of emergency plans in relation to environmental pollution**

- Requirement of local (country specific) or regional legislation
- An understanding of the need for emergency preparedness within an organisation



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- Development and implementation of on-site and off-site emergency plans
- Business continuity planning
- Testing emergency plans, desktop etc and monitoring performance
- Review of emergency plans
- Dealing with the media.

***Recommended tuition time not less than 8 hours***

## Element 4: Environmental risk evaluation and control

### Learning outcomes

- 4.1 Explain the principles of environmental aspect identification
- 4.2 Explain the principles of operational planning and control relating to the organisation's significant environmental aspects
- 4.3 Explain the techniques for evaluating environmental aspects arising from workplace activities
- 4.4 Outline the purpose of an environmental impact assessment and environmental statement in relation to large developments.

### Content

#### 4.1 Principles of environmental aspect identification with reference to ISO 14001:2015

- Meaning of:
  - source, pathway, receptor model
  - environmental aspect (element of an organisation's activities or products or services that can interact with the environment)
  - environmental impact (any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects)
- The relationship between environmental aspects and environmental impacts
- Aspects and impacts within the control of the organisation and those that they can influence
- Transboundary impacts: distinction between global, transboundary, regional and local environmental effects
- Effects and impacts on quality of life:
  - nuisances such as noise, dust and odour
  - visual amenity
  - transport effects
  - waste from consumer products (packaging)
- Systematic method for identifying environmental aspects and associated impacts (with reference to ISO 14001:2015)
  - identification of and application of life cycle perspective to the organisation's products, services and activities
  - identify aspects for each of the products, services and activities including inputs and outputs of each
  - decide if these aspects are **direct** or **indirect**
  - decide if the aspects are present under, **normal, abnormal or emergency** situations
  - management of change: assessing environmental aspects resulting from a change of product, plant or process
  - identify the impacts associated with each of the aspects (including the receptor for each impact)

- evaluate the significance of each of the aspects and their impacts ie,
  - o data on environmental problems
  - o sources of information and advice on environmental risks
  - o use of environmental monitoring data to evaluate risk
  - o use of biological indicators to evaluate risk
  - o uses and limitations of external data sources
  - o awareness of the relationships between source, pathway and receptor
- record the significant findings
- recommendations and timescales for actions to be taken
- monitor
- review

#### **4.2 Principles of operational planning and control (with reference to ISO 14001:2015)**

- Meaning of the Best Practicable Environmental Option (BPEO)
- Assessment of control systems to determine the Best Available Techniques (BAT) and the importance of an integrated approach to pollution prevention and control
- Selection of operational control methods (singly or a combination of) to ensure effective operation
  - use of the hierarchy: elimination, substitution, reduction or control
  - process design (ie, to prevent error, ensure consistent results)
  - technology to control processes (ie, engineering controls)
  - use of competent workers
  - procedures in place to ensure processes are always performed in the same way (systems of work)
  - monitoring/measuring to check results (links to Element 5)
  - determine use and amount of document information
- Factors affecting choice of operational control measures:
  - long term/short term
  - applicability
  - practicability
  - cost
- Possible conflicts between protection of workers and protection of the environment; reconciliation of such conflicts.
- Factors to be considered in the selection of the best solution for an organisation based on relevant risk.
- Consideration of fiscal controls ie taxes on landfill, taxes on aggregate extraction.

#### **4.3 Evaluation of environmental aspects and impacts**

- Cost benefit analysis
  - cost benefit analysis as applied to environmental aspects and impacts
- Environmental modelling
  - principles and application of environmental modelling
  - limitations of environmental modelling
- Life cycle analysis
  - cradle-to-grave concept

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- principles and techniques of life cycle analysis
- benefits of a circular economy (ie, alternative to linear economy; keep resources in use for as long as possible; extract maximum value whilst in use; recover and regenerate products/materials at end of each life)
- Assessment of environmental toxicity
  - the meaning of Predicted No Effect Concentration (PNEC)
  - principles of environmental toxicity and ecotoxicity testing.

**4.4 Environmental impact assessments and statements for large developments**

- The purpose of an environmental impact assessment/environmental statement in larger developments.
- Current and future environmental considerations which should be included when preparing an environmental impact statement.

***Recommended tuition time not less than 14 hours***

## **Element 5: Environmental performance evaluation**

### **Learning outcomes**

- 5.1 Explain appropriate indicators that may reflect an organisation's environmental management performance
- 5.2 Outline appropriate monitoring techniques and differentiate between active (pro-active) monitoring and reactive monitoring.

### **Content**

#### **5.1 Performance Indicators**

- Environmental management performance indicators, including incidents, emissions to atmosphere (see Element 8), waste (see Element 7), water (see Element 9), energy (see Element 12), transport and travel (see Element 8), carbon dioxide and carbon (measurement conversion); use of key performance indicators (KPIs).

#### **5.2 Monitoring techniques**

- Active and reactive monitoring:
  - active monitoring measures including the monitoring of performance standards and criteria and the systematic inspection of the workplace
  - use of environmental inspections and their roles within a monitoring regime
  - reactive monitoring measures including data on accidents/incidents, emissions, waste, water and energy; complaints by workforce and neighbours; and enforcement action
- Workplace inspections:
  - role of inspections
  - factors governing frequency and type of inspection
  - competence of inspector
  - format and content of inspections
  - typical locations to be inspected frequently ie, materials storage areas, vehicle refuelling areas
  - use of checklists
  - allocation of responsibilities and priorities for action
  - the requirements for effective report writing (style, structure, emphasis, persuasiveness, etc)
- Auditing:
  - scope and purpose of auditing environmental management systems; distinction between audits and inspections
  - key elements and features of planning and undertaking environmental audits
  - responsibility for audits
  - advantages and disadvantages of external and internal, in-house and proprietary environmental audit systems
  - the range of environmental audit applications including: due-diligence audits, compliance audits, management system audits, single issue audits (ie, waste and energy) and sustainability audits.

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

## **Element 6: Sustainability**

### **Learning outcomes**

- 6.1 Explain the principles of environmental sustainability
- 6.2 Outline the role of environmental corporate social responsibility and self-regulation
- 6.3 Outline the drivers for global adoption of sustainability.

### **Content**

#### **6.1 Principles of sustainability**

- The definition of sustainability as given in Principle 3 of the Rio Declaration on Environment and Development from the Rio Earth summit
- Principles of sustainability
  - the three pillars of sustainability – economic, social and environmental
  - the importance of sustainability and resource efficiency in decision making
  - design, construction and resource efficiency with sustainability as an objective
  - precautionary principle, polluter pays as examples of drivers for sustainability
  - population growth and rising standards of living placing a strain on natural resources (including competition for resources) and being a threat to a sustainable future
- The principles of Ecological, Carbon and Water Footprints
- The 5 sustainable capitals and the dependencies between them
  - Natural
  - Social
  - Human
  - Financial
  - Manufactured/Built
- Concept of product stewardship
- Concept of ethical probity
- The need for sustainability reporting and auditing.

#### **6.2 Environmental corporate responsibility and self-regulation**

- The role of corporate social responsibility in promoting sustainability
- Assumption of responsibility (including corporate governance) for the environmental burdens caused by activities, products and services
- Action to improve own performance, as well as the performance of others, within an organisation's control or sphere of influence
- Control of social irresponsibility (child labour, slavery, water abstraction, waste dumping)
- Implementation of environmental risk management controls with a sustainability perspective to avoid, assess and reduce environmental risks

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- Adoption of life cycle thinking from raw materials and energy generation, through production and use to end-of life disposal or recovery; supply chain requirements
- Communicating commitments, performance and other information related to social responsibility; concept of 'social licences'
- The effects on business of adverse stakeholder reaction to environmental performance concerns
- The meaning and role of self-regulation
- The role and function of corporate governance in a system of self-regulation.

**6.3 Global recognition of the importance of sustainability**

- The function of the 1992 Convention on Biological Diversity (1992 Biodiversity Convention)
- The function of the International Tropical Timber Agreement 2006
- The function of the 1972 Convention for the Protection of the World Cultural and Natural Heritage (1972 World Heritage Convention)
- The purpose of the 1992 Climate Change Convention
- The effect of adopting Agenda 21 of the United Nations Conference on Environment and Development (UNCED), Rio de Janeiro, 1992 on UN member states
- Overview of the UN Global Compact in respect of the environment (Principles 7-9):
  - implementation of a precautionary approach to environmental challenges (principle 7);
  - adoption of initiatives to promote greater environmental responsibility (principle 8)
  - the development and diffusion of environmentally friendly technologies (principle 9)
- The purpose of the UN Sustainable Development Goals and targets.

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

## **Element 7: Waste management**

### **Learning outcomes**

- 7.1 Explain the need for responsible waste management
- 7.2 Describe the benefits of waste management
- 7.3 Outline the requirements to monitor waste
- 7.4 Outline appropriate control strategies and measures for solid wastes.

### **Content**

#### **7.1 Responsible waste management**

- The use of hierarchies in waste management plans
- Principles of waste minimisation
- Hazardous and non-hazardous landfill
- The importance of responsible waste management
- The concept of a circular economy
- The role of design in reducing waste
- Steps to responsible waste management: segregation, identification and labelling, storage, transportation and disposal.

#### **7.2 Benefits of waste management**

- Economic argument for waste management
- Setting of targets for waste minimisation, recovery rates and waste diverted from landfill/incineration
- Education and training of workers in the importance of waste minimisation
- Weatherproofing and appropriate storage of materials
- Engagement of authorised waste contractors.

#### **7.3 Monitoring waste**

- The purpose and benefits of waste monitoring
- The environmental practitioner's role in monitoring solid waste:
  - understanding why and when sampling is required (including compliance with legislation)
  - limits of competence
  - arranging for specialist/s to undertake sampling
  - analysis of sampling reports
  - making and implementing recommendations from the analysis of sampling reports
- The purpose of waste audits.



#### **7.4 Control strategies for solid wastes**

- Engineering control measures to eliminate or, where not possible, reduce or render harmless solid wastes at source
- The benefits and limitations of the following solid waste treatment techniques:
  - incineration, pyrolysis, gasification and plasma arc
  - biomechanical waste treatment (BWT)
  - fermentation, anaerobic digestion and composting
- Landfill
  - the principles of site selection
  - behaviour of wastes (including materials banned from landfills)
  - site management controls
  - zero waste to landfill.

***Recommended tuition time not less than 8 hours***

## **Element 8: Managing emissions to the atmosphere**

### **Learning outcomes**

- 8.1 Outline the types of emissions to atmosphere and the harm to the environment from specific pollutants
- 8.2 Outline the purpose of monitoring atmospheric emissions, including the practitioner's role, the sampling methods available and the situations in which each method would be used
- 8.3 Describe appropriate control strategies and measures for releases to atmosphere.

### **Content**

#### **8.1 Emissions to the atmosphere**

- Types of emission: gaseous, vapour, mist, fume, smoke, dust, grit, fibre
- Specific pollutants and the harm that they can cause to the environment:
  - Carbon dioxide (CO<sub>2</sub>)
  - Nitrogen oxides (NO<sub>x</sub>)
  - Sulphur oxides (SO<sub>x</sub>)
  - Ozone (O<sub>3</sub>)
  - Volatile Organic Compounds (VOCs)
  - aromatic hydrocarbons and polycyclic aromatic hydrocarbons
  - heavy metals
  - methane
- Impacts on air quality and health from pollutants (consider external and internal sources)
- Role of emissions in contributing to: ozone depletion, photochemical air pollution, acidification, global warming/climate change
  - the significance of the 2015 Paris Agreement (COP 21)
- Effects of transboundary pollution
- The purpose of national emission ceiling levels under the 1999 Gothenburg Protocol.

#### **8.2 Monitoring atmospheric emissions**

- The purpose and benefit of monitoring atmospheric emissions
- The environmental practitioner's role in monitoring atmospheric emissions
  - understanding why and when sampling is required (including compliance with legislation)
  - arranging for specialists to undertake sampling
  - limits of competence
  - analysis of sampling reports
  - making and implementing recommendations from the analysis of sampling reports

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- Sampling methods and the situations in which they would be used: grab sampling, continuous monitoring, isokinetic sampling, in-situ or extractive monitoring, remote sensing
- Implementing additional control measures as an outcome of monitoring results.

**8.3 Control strategies and measures**

- Control techniques for gaseous emissions: adsorption; absorption; condensation; combustion; bio-filtration
- Engineering control measures to eliminate, or where not possible, reduce or render harmless emissions to the atmosphere
  - selection of appropriate control options for different types of substance ie,  
*dust*: gravity settling chamber, cyclone separator, electrostatic precipitators, fabric filters (baghouse enclosures)  
*gases/vapours*: dry scrubber, wet scrubber, cyclone scrubber, water wall, soil bio-filters, bio-scrubbers

***Recommended tuition time not less than 8 hours***

## **Element 9: Managing emissions to the water environment**

### **Learning outcomes**

- 9.1 Outline the types of pollutants/effluents likely to be discharged to the water environment
- 9.2 Describe the purpose of monitoring effluent discharges and the measuring techniques used
- 9.3 Outline different potable water and wastewater treatment methods and the situation/s in which each method would be used
- 9.4 Explain the need for sustainable water abstraction
- 9.5 Outline the risks associated with flooding and appropriate control measures.

### **Content**

#### **9.1 Discharge of effluent/pollutants to the water environment**

- Principal types of water pollutants
  - physical (solids, thermal, radiological)
  - chemical
  - biological
- Specific pollutants and the possible damage they can cause to the water environment
  - organic (milk, plant matter) and inorganic substances (iron) and the relationship with oxygen depletion
  - total solids (silt), suspended solids and dissolved solids
  - acids and alkalis
  - nitrogen compounds and phosphorus compounds
  - hydrocarbons (petrol, oil, grease), persistent organic pollutants (POP)
  - pesticides
  - thermal
  - pathogens, parasites
  - chlorine and chlorine containing compounds (Trichloroethylene)
  - heavy metals (mercury, cadmium)
- Point and diffuse sources of pollution
- The causes and effects of eutrophication
- The need to prevent pollution from entering watercourses, including prevention of pollution from fire-fighting water runoff; marking, maintenance and mapping of drainage systems.

#### **9.2 Monitoring of effluent discharges**

- The purpose of water monitoring and effluent discharges
- The environmental practitioner's role in monitoring water pollution
  - understanding why and when sampling is required (including compliance with legislation)

- arranging for specialists to undertake sampling
- limits of competence
- analysis of sampling reports
- making and implementing recommendations from the analysis of sampling reports
- Purpose of water quality scales ie, Biotic Index
- Sampling of liquid effluents: grab sampling, continuous monitoring
- Implementing additional control measures as an outcome of monitoring results
- The meaning of and the possible effect on the water environment of the following:
  - dissolved oxygen (DO)
  - biochemical oxygen demand (BOD)
  - chemical oxygen demand (COD)
  - total oxygen demand (TOD)
  - pH scale
  - total suspended solids
  - total dissolved solids
  - turbidity.

### **9.3 Potable water and wastewater treatment methods and the situations when they would be used**

- The range of engineering control measures to eliminate or, where not possible, reduce or render harmless releases of polluting matter to watercourses and the situations where they would be used
  - preliminary, primary, secondary and tertiary treatment including: storm flow separation; screening; grit removal (grit chambers); filtration; membrane filtration (micro, ultra and nano/reverse osmosis filtration including percolating/trickling filters and rotating biological contactor); dissolved air flotation; sedimentation; use of activated carbon; air stripping; constructed wetlands; aeration; anaerobic digestion; aerobic digestion (including activated sludge); disinfection sumps and oil separators
- Different methods for the desalination of water abstracted from the water environment ie, multi-stage flash, distillation, reverse osmosis, vapour compressor
- The advantages and disadvantages of desalination.

### **9.4 Abstraction from the water environment**

- The need for sustainable water abstraction and the consequences of non-equitable use ie, impact on downstream users
- The meaning of and purpose of water neutral developments
- The purpose of a general water balance equation
- Water stress
  - definition
  - water exploitation index (calculation - water abstraction ÷ long term available annual resource); warning threshold (20%).

**9.5 Risk assessment of flood areas, consequences of and control measures for flooding**

- Consequences of flooding
  - direct effects ie, damage to property/equipment/stock, loss of income, business continuity, increasing insurance premiums, pests infestations, health issues
  - indirect effects ie, damage to roads and other infrastructure, clean-up costs/removal of debris, general health and safety issues
- Factors to be taken into account when assessing the risk from flooding
  - identification of sources of possible flooding ie, ground water, coastal, river and surface water, reservoir failure, failure of storage systems
  - typical climate in the area
  - historical site data
  - location of floodplains
  - possible severity of damage to property and local habitats/eco-systems
  - data from flood modelling and/or flood maps
  - climate change, including sea level rise
- Control and mitigation measures
  - maintenance of existing control measures ie, pumping stations capable of dealing with demand, holding tanks
  - emergency plans: up-to-date and regular drills carried out
  - monitoring updates from national/international environmental bodies
  - use of forestry and land management to increase water retention capacity
  - use of sustainable urban drainage systems for new and redevelopment projects
  - flooding to be considered when designing new buildings
  - local flood defences:
    - building of flood walls/defences/barriers
    - use of sandbags
    - use of constructed wetlands.

***Recommended tuition time not less than 8 hours***

## **Element 10: Control of environmental noise**

### **Learning outcomes**

- 10.1 Explain the characteristics of noise and advise on the measurement and assessment of environmental noise levels
- 10.2 Outline control strategies and methods for the control of environmental noise.

### **Content**

#### **10.1 Characteristics, measurement and assessment of environmental noise**

- Source of environmental noise: on and offsite traffic; alarms; ventilation systems; materials handling; construction
- Basic acoustics: pressure, frequency, amplitude, intensity, power; weighting scales; percentile sound levels; equivalent continuous sound pressure level; narrow band noise (fan resonance); low frequency environmental noise
- Measurement and assessment of environmental noise and the potential for complaints with reference to BS4142:2014.

#### **10.2 The effects and control of environmental noise**

- The effects of environmental noise on human health, local communities and wildlife
- The need to control noise emissions from industrial premises and construction activities
- The range of engineering and procedural control measures and strategies that can be applied to control noise emissions at source, through propagation and at the receptor ie, insulation, absorption, damping, isolation, acoustic barriers or screens, silencers, distance, maintenance, administrative options ie, purchasing policy, timing of work.

***Recommended tuition time not less than 5 hours***

## **Element 11: Hazardous substances and contaminated land**

### **Learning outcomes**

- 11.1 Describe the environmental requirements affecting the supply, storage, use and transportation of hazardous substances
- 11.2 Outline the methods for the safe use and handling of pesticides
- 11.3 Outline the hazards with contamination of soil and groundwater and the options for remediation.

### **Content**

#### **11.1 Supply, storage and use of hazardous substances**

- The need for safe supply, storage, use and transportation of hazardous substances.

#### **11.2 Use of pesticides**

- The role of the World Health Organisation's Pesticide Evaluation Scheme
- The environmental aspects and impacts associated with the storage, use and handling of pesticides.

#### **11.3 Contamination of soil and groundwater**

- Definition of contaminated land
- Environmental aspects and impacts associated with contaminated land
- The risk to groundwater from contaminated land
- How contamination can occur and how contaminants travel (including deliberate burial of hazardous substances)
- Methods of investigating contaminated land and groundwater
- Remedial techniques for contaminated soil and groundwater (including costs and complying with legislation).

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



## **Element 12: Energy use**

### **Learning outcomes**

- 12.1 Explain the advantages and disadvantages of different sources of energy
- 12.2 Explain the need for energy efficiency
- 12.3 Describe an energy monitoring strategy and the benefits and limitations of carrying out monitoring.

### **Content**

#### **12.1 The advantages and disadvantages of traditional and non-traditional sources of energy**

- Advantages and disadvantages of non-renewable energy ie, coal, petroleum/oil, natural gas and shale gas (hydraulic fracturing “fracking”)
- Advantages and disadvantages of renewable energy ie, wind power, solar power (solar thermal and solar photovoltaic energy), tidal power, wave power, hydropower, nuclear power, bio-fuels and geothermal energy.

#### **12.2 The need for clean energy use and efficiency**

- The meaning and purpose of carbon footprinting
- Energy efficiency: relationship to cost and profit (understand total immediate and future energy costs)
- Provision of information regarding energy efficiency: energy performance certificates; energy labelling; use of sankey diagrams
- Energy efficiency: design and assessment of products and buildings
- Benefits of managing energy usage
- Barriers to good energy management
- Practical measures for reducing energy consumption (ie, use of building energy management systems where possible; turn off equipment when not in use, don't leave it in standby mode, turn down/off heating where possible etc).

#### **12.3 Energy monitoring, including the benefits and limitations**

- Factors to be considered in an energy auditing and monitoring strategy
- Benefits and limitations of energy monitoring.

***Recommended tuition time not less than 8 hours***

## Unit ED1: Tutor References

### International statutory instruments, Protocols, Conventions etc

Legislation	Country	Element/s
Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment <a href="#">Link to Directive 2014/52/EU</a>	EU Directive	4
Protocol to Abate Acidification, Eutrophication and Ground-level Ozone, Gothenburg, 1999 <a href="#">Link to Gothenburg Protocol</a>	UN Protocol	8, 9
UN Convention for the Protection of the World Cultural and Natural Heritage, 1972 <a href="#">Link to World Heritage Convention</a>	United Nations	6
UN Convention on Biological Diversity, 1991 <a href="#">Link to CBD</a>	UN Convention	1, 6
UN Conference on Environment and Development, Rio, 1992 <a href="#">Link to Rio Declaration</a>	United Nations	1, 2, 6
UN Conference on Environment and Development, Rio, 1992 (Agenda 21) <a href="#">Link to Agenda 21</a>	United Nations	6
UN Convention on Environmental Impact Assessment in a Transboundary Context <a href="#">Link to UN EIA Convention</a>	United Nations	4
UN Framework Convention on Climate Change (UNFCCC) <a href="#">Link to UNFCCC COP21 (Paris agreement)</a> <a href="#">Link to COP21</a>	United Nations	6
UN International Tropical Timber Agreement, 2006 <a href="#">Link to ITTA</a>	United Nations	6

### Other relevant references

Reference title	Reference detail eg ISBN number	Element/s
BS 4142:2014 – Methods for rating and assessing industrial and commercial sound	ISBN: 978-0-580-80051-1	10
BS 5228-1:2009 + A1:2014 – Code of practice for noise and vibration control on construction and open sites	ISBN: 978-0-580-77749-3	10
Chartered Institution of Water and Environmental Management	<a href="http://www.ciwem.org.uk/">http://www.ciwem.org.uk/</a>	1, 2
ICUN Red List of Threatened Species	<a href="http://www.iucnredlist.org/">http://www.iucnredlist.org/</a>	1
Institute of Environmental Management and Assessment (IEMA)	<a href="http://www.iema.net/">http://www.iema.net/</a>	1, 2
ISO 9011:2011 – Guidelines for auditing management systems	ISBN: 978-0-580-77524-6	5
ISO 14001:2015 Environmental management systems	ISBN: 978-0-5808-2611-5	1, 2, 3, 4
ISO 14001:2016 Environmental management systems – General guidelines on implementation		3
ISO 14040:2006 Environmental management, Life Cycle Analysis, Principles and framework	ISBN: 0-580-48992-2	4

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<b>Reference title</b>	<b>Reference detail eg ISBN number</b>	<b>Element/s</b>
ISO 50001:2011 Energy management systems – requirements with guidance for use		12
United Nations Global Compact	<a href="#">Link to UN Global Compact</a>	6
United Nations Sustainable Development Goals	<a href="#">Link to Sustainable Development Knowledge Platform</a>	6
World Health Organisation Pesticide Evaluation Scheme (WHOPES)	<a href="#">Link to WHOPES</a>	11

## **Unit IDEM2: Environmental regulation**

### **Aim of the unit**

This unit provides students with a thorough grounding in the enforcement principles associated with environmental management. It aims to prepare students for a career in environmental management by providing them with the ability to apply their knowledge and understanding of environmental regulation to the 'controls' discussed in Unit ED1. In addition this knowledge and understanding prepares students for the written question paper assessment for Unit ED1 and the practical application (Unit NDEM2) which will be carried out in their own workplace.

## **Element 1: Enforcement of environmental legislation**

### **Learning outcomes**

- 1.1 Explain the mechanisms available for the enforcement of environmental law
- 1.2 Outline the role and influence of the United Nations and how key international treaties can influence local legislation in member states.

### **Content**

#### **1.1 Enforcement of environmental law**

- The role, function and limitations of legislation as a means of promoting environmental performance
- Mechanisms that may be used to enforce environmental law
  - prohibition and enforcement notices
  - other forms of notice: formal cautions, abatement, stop, suspension, revocation, variation, remediation, restoration, compliance
  - penalties such as fines/imprisonment and rights to compensation
  - other penalties: fixed monetary penalties, variable monetary penalties, enforcement undertaking, non-compliance penalties, enforcement cost recovery
- The typical role and function of enforcement agencies
- Different levels of standards and enforcement in different jurisdictions
- Use of UN statutory instruments in relation to transboundary pollution and water abstraction issues
- Permitting/consent requirements for the operation of industrial installations.

#### **1.2 Role and influence of the United Nations**

- Role and Influence of the United Nations
- Introduction of key International Treaties and how they might influence the introduction of transboundary agreements and local legislation in specific countries

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- example: the Protocol on Substances that Deplete the Ozone Layer (Montreal), 1987 lead to EC Regulation 2037/2000 (recast by 1005/2009) on substances that deplete the ozone layer which brought into force the Ozone-Depleting Substances Regulations 2015 in the UK.

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

## **Element 2: Pollution prevention and control multilateral treaties**

This element will cover the main multilateral treaties relating to various sources of pollution:

- 2.1 Explain the relevant international statutory instruments relating to waste management
- 2.2 Explain the relevant international statutory instruments for managing emissions to the atmosphere
- 2.3 Explain the relevant international statutory instruments for the prevention and control of discharges to, or abstraction from, watercourses
- 2.4 Explain the relevant international statutory instruments affecting the storage, use and transport of hazardous substances
- 2.5 Explain the relevant international statutory instruments relating to contaminated land and pesticides
- 2.6 Explain the relevant international statutory instruments relating to energy usage.

### **Content**

#### **2.1 Waste management multilateral treaties (cross reference with Unit ED1, element 7)**

- Hierarchy of control to be applied to solid wastes
  - prevention/source reduction
  - preparing for reuse
  - recycling/composting
  - other recovery/energy recovery
  - treatment and disposal
- Sources of waste:
  - municipal waste: household, shops, office and other commercial units
  - non-municipal waste: industrial, mining and agriculture
- Categories and definitions of waste:
  - non-hazardous ie, not listed in waste catalogues/listings
  - hazardous ie, as defined by waste catalogues/listings
  - inert ie, bricks, sand, concrete
  - clinical ie, bandages, dressings, sharps (needles)
  - toxic ie, any waste which can cause death, injury or birth defects to living creatures (pesticides, carcinogens, mutagens)
  - radioactive ie, nuclear waste
- Classification and coding of waste and the reasons for classifying waste with reference to: European Waste Catalogue; USA Hazardous Waste Listings; Basel Convention (Annex I, II, III, IV, VIII and IX).
- The need for regulation and registration of waste carriers and those handling and disposing of waste
- Regulatory documentation for waste storage, treatment and disposal facilities
- Landfill disposal: Hazardous and non-hazardous landfill, landfill taxation

- The specific requirements to manage:
  - electrical and electronic waste
  - waste batteries and accumulators
  - end of vehicle life
- The additional legal responsibilities/requirements of producers and users of packaging materials
- The purpose of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (adopted, amended in 1995)

## **2.2 Multilateral treaties for managing emissions to the atmosphere (cross reference with Unit ED1, element 8)**

- The significance and function of the 1979 United Nations Economic Commission for Europe (UNECE) Convention on Long Range Transboundary Air Pollution and its protocols
  - 1984 Monitoring and Evaluation Protocol (amended 2014)
  - 1985 Sulphur Protocol (thirty per cent club) and 1994 further reductions of sulphur emissions (amended 2007)
  - 1988 NO<sub>x</sub> Protocol (amended 1996)
  - 1991 Volatile Organic Compounds Protocol (amended 1996)
  - 1998 Aarhus Protocol on Heavy Metals (amended 2012)
  - 1998 Aarhus Protocol on Persistent Organic Pollutants (amended 2009)
  - 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone (amended 2012)
- The role of international statutory instruments in phasing out harmful substances released to the atmosphere
- The significance and function of the 1985 Vienna Convention (including universal ratification in 2009) and the 1987 Montreal Protocol (and adjustments made in 1991, 1993, 1996, 1998, 2000 and 2008)
- The significance of the United Nations Framework Convention on Climate Change (1992), the 1997 Kyoto Protocol; the 2001 'Marrakesh Accords'; the 2012 Doha Amendment to the Kyoto Protocol (cross reference with 3.6).

## **2.3 Multilateral treaties for the management of water courses (cross reference with Unit ED1, element 9)**

- The purpose of the 1997 Watercourses Convention
- The reasons for establishing lists of substances with 'limit values' which can be released into watercourses
- Procedures for discharging effluent/substances with 'limit values' into water courses
- The purpose and use of water abstraction licences/authorisations.

## **2.4 Supply, storage, use and transport of hazardous substances (cross reference with Unit ED1, element 11)**

- The purpose and adoption into national law of the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

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- The purpose of the ILO Convention Prevention of Major Industrial Accidents Convention, 1993 (C174) and associated Recommendation (R181)
- The purpose of the 2001 Stockholm Convention on Persistent Organic Pollutants in respect of chemicals
- The specific environmental requirements relating to the transportation of hazardous substances by:
  - **road** under the United Nations Recommendation on the Transport of Dangerous Goods
  - **sea** under the International Maritime Dangerous Code (IMDG)
  - **air** under the IATA Dangerous Goods Regulations.

**2.5 Multilateral treaties relating to land and wildlife preservation and pesticides use (cross reference with Unit ED1, elements 1 and 11)**

- The function of:
  - 1992 Convention on Biological Diversity
  - 1972 World Heritage Convention
- Protection given to areas/features considered to be of outstanding value to humanity by World Heritage eg, The Great Barrier Reef, Lake Malawi National Park, Giants Causeway, Canadian Rocky Mountain Parks, The Great Wall
- The purpose of the 1998 Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (known as the 1998 Chemicals Convention)
- The purpose of the 2001 Stockholm Convention on Persistent Organic Pollutants in respect of pesticides.

**2.6 Multilateral treaties relating to energy use (cross reference with Unit ED1, element 12)**

- The significance of the 1997 Kyoto Protocol; the 2001 'Marrakesh Accords'; the 2012 Doha Amendment to the Kyoto Protocol (cross reference with 3.2) in relation to Emissions Trading Schemes and the reduction of greenhouse gas emissions
- Legislation affecting the production of energy-related products and energy efficiency in buildings.

***Recommended tuition time not less than 18 hours***



## Unit IDEM2: Tutor References

### Statutory instruments

Legislation	Country	Element/s
Convention for the protection of the ozone layer, Vienna, 1985 <a href="#">Link to the Vienna Convention</a>	United Nations	2
Convention on biological diversity, 1992 <a href="#">Link to CBD</a>	United Nations	2
Convention on the Long Range Transboundary Air Pollution (UNECE) <a href="#">Link to Transboundary Air Pollution Convention</a>	United Nations	2
Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Basel <a href="#">Link to the Basel Convention</a>	United Nations	2
Convention on the protection and use of transboundary watercourses and international lakes, Helsinki, 1992 <a href="#">Link to transboundary watercourses convention</a>	United Nations	2
Chemicals Convention, Rotterdam, 1998 <a href="#">Link to the Rotterdam Convention</a>	United Nations	2
Decision 2000/532/EC establishing a list of hazardous waste <a href="#">Link to 2000/532/EC</a>	European Commission	2
Directive 2008/98/EC on waste <a href="#">Link to 2008/98/EC</a>	EU Directive	2
Directive 2012/27/EU on energy efficiency <a href="#">Link to 2009/125/EC</a>	EU Directive	2
Framework convention on climate change, New York, 1992 and related Protocols (Kyoto) <a href="#">Link to the Framework on CC</a>	United Nations	2
Prevention of Major Industrial Accidents Convention, ILO, 1992 (C174) and associated Recommendation (R181)	<a href="#">Link to C174</a> <a href="#">Link to R181</a>	2
Protocol concerning the control of emissions of nitrogen oxides, Sofia, 1988 <a href="#">Link to Nitrogen Oxides Protocol</a>	United Nations	2
Protocol concerning the control of emissions of volatile organic compounds or their transboundary fluxes, Geneva, 1991 <a href="#">Link to VOC Protocol</a>	United Nations	2
Protocol on further reduction of sulphur emissions, Oslo, 1994 <a href="#">Link to sulphur emissions protocol</a>	United Nations	2
Protocol on heavy metals, Aarhus, 1998 <a href="#">Link to Aarhus Protocol</a>	United Nations	2
Protocol on long-term financing of the cooperative programme for monitoring and evaluation of the long-range transmission of air pollutants in Europe <a href="#">Link to Monitoring and Evaluation Protocol</a>	United Nations	2
Protocol on persistent organic pollutants, Aarhus, 1998 <a href="#">Link to POP Protocol</a>	United Nations	2
Protocol on substances that deplete the ozone layer, Montreal, 1987 <a href="#">Link to the Montreal Protocol</a>	United Nations	2
Protocol on the reduction of sulphur emissions or their transboundary fluxes by at least 30 per cent, Helsinki, 1985 <a href="#">Link to sulphur protocol</a>	United Nations	2
Protocol to abate acidification, eutrophication and ground-level ozone, Gothenburg, 1999	United Nations	2

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<b>Legislation</b>	<b>Country</b>	<b>Element/s</b>
Regulation 106/2008 (EC) on a Union energy-efficiency labelling programme for office equipment <a href="#">Link to 106/2008</a>	EU Regulation	2
Regulation (EC) No 1005/2009 Substances that Deplete the Ozone Layer <a href="#">Link to 1005/2009</a>	EU Regulation	1
Watercourses Convention <a href="#">Link to the Watercourse convention</a>	United Nations	2
World Heritage Convention, 1972 <a href="#">Link to WHC</a>	United Nations	2

**Other relevant references**

<b>Reference title</b>	<b>Reference detail eg ISBN number</b>	<b>Element/s</b>
Emergency planning for major accidents, HSG191	HSE Books, ISBN: 978-0-7176-1695-4 <a href="#">Link to HSG191</a>	2
Globally Harmonized System of Classification and Labelling of Chemicals (GHS), United Nations	<a href="#">Link to GHS</a>	2
USA Hazardous Waste listings	<a href="#">Link to USA Hazardous Waste listings</a>	2

## **Unit IDEM2: Environmental regulation - overview**

### **Aim of the unit**

Unit IDEM2 will enable students to demonstrate their ability by applying the knowledge and understanding gained from their Unit ED1 and IDEM2 studies to a practical workplace situation.

### **Purpose and aim**

The purpose of this Unit is for candidates to complete an assignment which will assess the practical application of their knowledge and understanding from Units ED1 and IDEM2 of the International Diploma in Environmental Management.

The aim of the assignment is for candidates to review and critically analyse their organisation's environmental management system (EMS) in eight different areas; the review will also include a synopsis of environment regulation as it could apply to their organisation.

From the review and analysis of the EMS, candidates will be required to produce a report for top management on the overall performance of the EMS. The report must highlight three environmental concerns, which can be taken from any of the areas reviewed, and make recommendation/s for improvement for each of these.

### **Content**

Unit IDEM2 contains specific syllabus content which can be found from page 40 of this Guide. However, when completing Unit IDEM2, students will be expected to use the knowledge and understanding gained from both Units ED1 and IDEM2 when completing the assignment.

### **Assignment brief**

The candidate is required to carry out a review and analysis of their organisation's EMS. From this review, the candidate will be required to produce a report for top management on the overall performance of the EMS. The report must highlight three environmental concerns, which can be taken from any of the areas reviewed, and make recommendations for improvement for each of these.

The assignment should include the following.

- An executive summary.
- An introduction (including background on environmental regulation).
- Review and critical analysis of the organisation's EMS.
- Evaluation of the top three environmental concerns and identification of improvements to be made for each.
- Conclusions and recommendations which summarise the main issues identified and lead to justified recommendations.
- Bibliography and referencing.
- Appendices.

## **Assessment location**

The Unit IDEM2 assignment must be carried out in the student's own workplace. Where the student does not have access to a suitable workplace, the accredited course provider should be consulted to help in making arrangements for the student to carry out the assignment at suitable premises.

Students do not require supervision when carrying out the assignment, but the student must sign a declaration that Unit IDEM2 is their own work.

Students and employers should be aware that the status of the report undertaken to fulfil the requirements of Unit IDEM2 is for educational purposes only. It does not constitute an assessment for the purposes of any legislation, regulations, or standards.

## **Submission of completed work**

Assignment reports should be submitted before the set submission date; there are four submission dates each year in February, May, August and November.

The actual dates will be published by NEBOSH annually. Students intending to submit an assignment must register through their accredited course provider using the appropriate form and paying the appropriate fee.

Neither the candidate's name nor their accredited course provider's name/number should appear anywhere in the assignment.

Following registration, candidates will receive a pre-submission email which confirms their registration and includes instructions for electronic submission of their assignment.

Students must submit their assignments electronically and by doing so they:

- give permission for the work to be screened by Turnitin UK and understand that it will be added to the Turnitin database; and
- declare that the work is original and does not include work from other sources except where identified by reference.

Cases of plagiarism or collusion will be dealt with severely and are liable to result in the assignment being disqualified and the candidate being banned from future registrations. Any candidate who provides an opportunity for another candidate to use his/her assignment inappropriately shall be liable to the same sanction.

Candidates are strongly advised to keep a copy of their assignment.

## **Marking**

The Unit IDEM2 assignment is marked by appropriately qualified Examiners appointed by NEBOSH. Students must achieve the pass standard (50%) in order to satisfy the criteria for the qualification.

## **Further information**

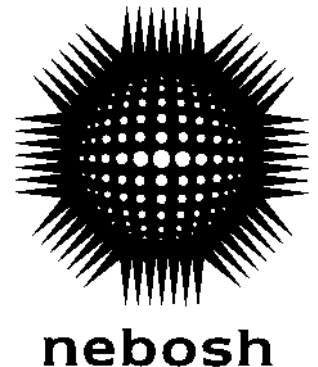
Further detailed information regarding Unit IDEM2 including forms and mark schemes will be produced in a separate guidance document for students and accredited course providers available from the NEBOSH website ([www.nebosh.org.uk](http://www.nebosh.org.uk)): 'Unit IDEM2 Assignment, guidance and information for students'.

## 6. Sample question paper

NEBOSH

UNIT ED1: CONTROLLING ENVIRONMENTAL ASPECTS

For: NEBOSH National Diploma in Environmental Management  
NEBOSH International Diploma in Environmental Management



**NEW SYLLABUS SAMPLE PAPER**  
**3 hours, 0930 to 1230**

*10 minutes reading time is allowed before the start of this examination. You may not write anything during this period.*

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This paper contains eight questions. Answer **FIVE** questions only.

All questions carry equal marks.

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

Start each answer on a new page.

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- 1 (a) **Identify** how manufacturing activities may contribute to causing the phenomenon known as the 'greenhouse effect'. (14)
- (b) **Explain** how the technique of life cycle analysis may be used to understand the extent to which a manufactured product contributes to the greenhouse effect. (6)
- 2 **Identify** environmental factors that should be considered when selecting a site for a new landfill for non-hazardous waste. (20)
- 3 An organisation's energy bill appears to be excessive.
- Describe** actions that could be taken to help reduce energy consumption without the need for heavy capital expenditure. (20)

- 4 (a) **Identify** the objectives of an environmental audit. (4)
- (b) **Outline** specific issues that should be addressed by an environmental audit. (16)
- 5 **Explain** the main requirements that apply to an environmental policy under ISO 14001:2015. (20)
- 6 **Describe** the air pollution control hierarchy **AND give** suitable practical examples for **EACH** stage. (20)
- 7 (a) **Give** the meaning of the term 'ecosystem'. (3)
- (b) **Outline** how ecosystems may be adversely affected by human activities. (17)
- 8 An organisation is considering implementing an environmental management system.
- Explain** possible benefits of implementing such a system that could be included in a paper to a Board of Directors. (20)