

December 2011

# Examiners' Report NEBOSH National Certificate in Environmental Management



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# Examiners' Report

## NEBOSH CERTIFICATE IN ENVIRONMENTAL MANAGEMENT

### UNIT NEC1: MANAGEMENT AND CONTROL OF ENVIRONMENTAL HAZARDS

DECEMBER 2011

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## Introduction

NEBOSH (The National Examination Board in Occupational Safety and Health) was formed in 1979 as an independent examining board and awarding body with charitable status. We offer a comprehensive range of globally-recognised, vocationally-related qualifications designed to meet the health, safety, environmental and risk management needs of all places of work in both the private and public sectors. Courses leading to NEBOSH qualifications attract over 25,000 candidates annually and are offered by over 400 course providers in 65 countries around the world. Our qualifications are recognised by the relevant professional membership bodies including the Institution of Occupational Safety and Health (IOSH) and the International Institute of Risk and Safety Management (IIRSM).

NEBOSH is an awarding body recognised and regulated by the UK regulatory authorities:

- The Office of the Qualifications and Examinations Regulator (Ofqual) in England
- The Department for Education and Skills (DfES) in Wales
- The Council for the Curriculum, Examinations and Assessment (CCEA) in Northern Ireland
- The Scottish Qualifications Authority (SQA) in Scotland

Where appropriate, NEBOSH follows the latest version of the “GCSE, GCE, Principal Learning and Project Code of Practice” published by the regulatory authorities in relation to examination setting and marking (available at the Ofqual website [www.ofqual.gov.uk](http://www.ofqual.gov.uk)). While not obliged to adhere to this code, NEBOSH regards it as best practice to do so.

Candidatescripts are marked by a team of Examiners appointed by NEBOSH on the basis of their qualifications and experience. The standard of the qualification is determined by NEBOSH, which is overseen by the NEBOSH Council comprising nominees from, amongst others, the Health and Safety Executive (HSE), the Confederation of British Industry (CBI), the Trades Union Congress (TUC) and the Institution of Occupational Safety and Health (IOSH). Representatives of course providers, from both the public and private sectors, are elected to the NEBOSH Council.

This report on the Examination provides information on the performance of candidates which it is hoped will be useful to candidates and tutors in preparation for future examinations. It is intended to be constructive and informative and to promote better understanding of the syllabus content and the application of assessment criteria.

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## General comments

Many candidates are well prepared for this unit assessment and provide comprehensive and relevant answers in response to the demands of the question paper. This includes the ability to demonstrate understanding of knowledge by applying it to workplace situations.

There are always some candidates, however, who appear to be unprepared for the unit assessment and who show both a lack of knowledge of the syllabus content and a lack of understanding of how key concepts should be applied to workplace situations.

In order to meet the pass standard for this assessment, acquisition of knowledge and understanding across the syllabus are prerequisites. However, candidates need to demonstrate their knowledge and understanding in answering the questions set. Referral of candidates in this unit is invariably because they are unable to write a full, well-informed answer to one or more of the questions asked.

Some candidates find it difficult to relate their learning to the questions and as a result offer responses reliant on recalled knowledge and conjecture and fail to demonstrate a sufficient degree of understanding. Candidates should prepare themselves for this vocational examination by ensuring their understanding, not rote-learning pre-prepared answers.

### Common pitfalls

It is recognised that many candidates are well prepared for their assessments. However, recurrent issues, as outlined below, continue to prevent some candidates reaching their full potential in the assessment.

- Many candidates fail to apply the basic principles of examination technique and for some candidates this means the difference between a pass and a referral.
- In some instances, candidates do not attempt all the required questions or are failing to provide complete answers. Candidates are advised to always attempt an answer to a compulsory question, even when the mind goes blank. Applying basic health and safety management principles can generate credit worthy points.
- Some candidates fail to answer the question set and instead provide information that may be relevant to the topic but is irrelevant to the question and cannot therefore be awarded marks.
- Many candidates fail to apply the command words (also known as action verbs, eg describe, outline, etc). Command words are the instructions that guide the candidate on the depth of answer required. If, for instance, a question asks the candidate to *describe* something, then few marks will be awarded to an answer that is an outline. Similarly the command word *identify* requires more information than a *list*.
- Some candidates fail to separate their answers into the different sub-sections of the questions. These candidates could gain marks for the different sections if they clearly indicated which part of the question they were answering (by using the numbering from the question in their answer, for example). Structuring their answers to address the different parts of the question can also help in logically drawing out the points to be made in response.
- Candidates need to plan their time effectively. Some candidates fail to make good use of their time and give excessive detail in some answers leaving insufficient time to address all of the questions.
- Candidates should also be aware that Examiners cannot award marks if handwriting is illegible.
- Candidates should note that it is not necessary to start a new page in their answer booklet for each section of a question.

## UNIT NEC1 – Management and control of environmental hazards

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- Question 1**
- (a) **Give the meaning of the term 'aspects' in the context of introducing an Environmental Management System (EMS).** (2)
- (b) **Identify types of environmental aspects that a company would review during the implementation of an EMS.** (10)
- (c) **Outline reasons why a company might undertake a review of previous assessments of its aspects.** (8)
- 

Candidates needed to understand the meaning of 'aspects' in order to be able to respond well to the rest of the question. Many candidates did not give a complete answer to part (a) . it can include any of an organisation's activities, products and services that can interact with the environment. In part (b) most could identify emissions to air, water and air as aspects but there are plenty more to choose from including inputs such as raw materials and energy, outputs such as waste and by-products from processes, life span and end disposal of products, transport issues and potential nuisances associated with the processes.

Reasons given to undertake a review in part (c) were also of variable quality. Apart from the commonly recognised ones of a change in legislation, change in the processes used or following an incident, there are less obvious drivers. These could be the availability of new technology, market changes and public pressure as well as internally determined pressures ranging from the requirements of the EMS or company policy, or the results of inspections, the need to reduce costs or as a result of poor performance.

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- Question 2** **Outline the benefits to a business of good environmental management.** (8)
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Generally this question was well answered. Many candidates structured their answers under the headings of legal, economic and moral and this helped to prepare good answers. There are financial, PR and marketing benefits of legal compliance and opportunities to save money on raw materials and other inputs and in the costs of dealing with waste and discharges. The confidence of various stakeholders is gained and this helps to promote the company and to retain or recruit staff and reduce insurance premiums. Perhaps the most important benefits are that there is better control over environmental risks and that environmental performance is improved.

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**Question 3** *Outline the main internal documentation which may be reviewed during an externally led audit of the environmental performance of a manufacturing plant.* (8)

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This question was also well answered although a few candidates failed to gain maximum marks by just producing a list rather than an outline. Key documents to be reviewed would include previous audits and follow up actions, records of emission monitoring, energy and raw materials used and waste production and recycling. Complaint data, enforcement notices or other communications from regulators and accident and incident reports would also be important in assessing performance. The company policy and procedures or EMS manual would also be inspected along with the legal aspects register, any consents and permits and evidence of compliance. Maintenance logs and the results of site inspections are also likely to be required. Staff training records and the results of attitude surveys could also be reviewed along with minutes from management reviews of any of the above.

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**Question 4** (a) *Outline how emissions of carbon dioxide are believed to contribute to climate change.* (4)

(b) *Outline FOUR different types of environmental impacts associated with climate change.* (4)

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Answers to part (a) were variable. Many candidates confused global warming with ozone depletion. Some candidates also digressed into sources of carbon dioxide which was not required. The key factors are that the earth is kept warm by infra-red radiation from the sun warming it up but that some of it is radiated back into space. The resulting climate is largely due to the balance between these two processes. Carbon dioxide builds up in the atmosphere and inhibits the radiation back into space so the earth warms up. The warmer atmosphere can hold more water vapour and it is this, along with the higher temperature that affects the climate.

Candidates were better able to answer part (b) although there was some confusion between impacts arising from and sources responsible for climate change. The main impacts are due to changes in rainfall patterns leading to both floods and droughts, risk of severe storms and higher temperatures in the air and sea and on the land. The consequences of these are melting ice caps, rising sea levels and damage to ecosystems.

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**Question 5** (a) *Identify FOUR potential effects of poor air quality.* (4)

(b) *Outline TWO methods available for reducing emissions of air pollutants.* (4)

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Answers to part (a) were disappointing. Many candidates identified chronic toxicity leading to lung diseases such as asthma and other respiratory difficulties. The remaining effects were only identified by a few. Nuisance such as smells, corrosion and acidification of waters caused by acid rain, climate change, damage to the ozone layer, fallout from particulates and smog are additional possible effects.

Part (b) was better answered, although some candidates could identify a method but had a limited knowledge of how it worked. Good answers contained a brief outline of the mechanisms behind filtration, wet scrubbers, electrostatic precipitators, adsorption

and cyclones. Flue gas desulphurisation was not mentioned. Tall chimneys and local exhaust ventilation on its own are not methods of reducing emissions: they just push the pollution further afield.

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**Question 6** *Outline the main possible sources of water pollution from an industrial site.* (8)

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This question was well answered although some candidates focussed on all the different types or sources of leaks at the expense of coming up with some additional alternatives. These could include surface water drainage contaminated by spills, process water, cooling water, bad waste disposal practice or solids washed off the surfaces, effluent discharges, misconnections, accidental damage to plant etc. and fire water runoff. Groundwater contamination can arise from spillages or other forms of contamination on to land.

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**Question 7** *A manufacturing company is managing its process waste consigned for disposal at landfill.*

*Outline the main requirements that apply to the company in order to satisfy its 'duty of care' as the producer of waste under the Environmental Protection Act 1990.* (8)

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This was another question that was generally well answered. The principle requirement is to ensure no harm is caused to the environment. This is achieved by keeping waste secure and preventing its escape, protection from the weather and vermin, segregation of different wastes and proper labelling and description. Control of the disposal route is managed through the use of transfer and consignment notes and the use of registered carriers, authorised persons and permit holders. There are requirements to keep records for statutory periods and the producer has to monitor and inspect the facilities to ensure compliance. Recycling and other aspects of the waste hierarchy are not a requirement of duty of care.

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**Question 8** (a) *Explain why energy efficiency is important.* (4)

(b) *Give FOUR different examples of how energy efficiency in an office can be improved without large capital expenditure.* (4)

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In part (a) most candidates identified the need to conserve fossil fuels, reduce emissions and better control of cost but very few explained about reducing incidents of environmental damage or the possibility of a legal requirement.

Part (b) required examples with low capital cost which some candidates ignored. Changing energy suppliers or purchasing green energy may reduce costs but do not improve efficiency. Good answers focussed on the management of lighting and heating systems by the choice of equipment such as low energy light bulbs and the use of controls such as motion sensors and thermostats coupled with training staff to switch things off when not in use. Managing ventilation through doors and windows, managing the use of transport and the regular maintenance of boilers and equipment are also important.

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**Question 9** *A large dust extraction fan and collector unit is to be installed against an outside wall of a factory building.*

(a) **Identify TWO** possible sources of noise from this equipment. (2)

(b) **Outline** the issues to be considered so that the equipment does not cause a noise nuisance when in operation. (6)

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In part (a) most candidates identified the fan or motor and vibration as sources of noise. It is also possible for the discharge point to be a source.

In answering part (b) some candidates went beyond the question and mentioned other sources of noise such as tannoys or the use of PPE. This emphasises the importance of reading the question. Good answers mentioned such factors as distance between source and neighbours, time of day and frequency and duration of operation, the use of attenuation methods on the plant, screening from neighbours and the maintenance of the equipment.

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**Question 10** *A company stores large quantities of flammable material on site.*

**Outline** the emergency arrangements that need to be in place in order to protect the environment from the impact of a fire. (8)

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This question was well answered by most candidates. The items mentioned included the need for an emergency plan supplemented with plans of the site and the drainage system. A control room either on or off site is usual and it manages liaison arrangements with the emergency services and other third parties. Practical measures include the need for alarms, control measures for fire suppression and dealing with fire water. Other preparations include schedules and information about materials on site, the provision of spill kits and PPE and means to store and dispose of contaminated materials. Management needs to clearly identify staff roles and contact details and have training and practice arrangements in place. Regular site inspections and reviews of procedures also need to be considered.

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**Question 11** *A construction company is planning to build a new office block on a derelict factory site which still has some old structures. The company's environmental policy commits them to minimising landfill disposal of their waste.*

**Outline** the measures that should be considered to enable the company to comply with this commitment. (8)

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A significant number of candidates failed to gain good marks for this question. A lot of candidates either could not think of enough measures to outline or spent too much of the answer not focusing on the measures and went on to describe about permits, contaminated land assessments or how to deal with waste. Most candidates mentioned the need for segregation and recycling of waste streams, and reusing rubble as hardcore, and a few mentioned retaining as much of the existing structures as possible. Few candidates mentioned measures associated with the new construction such as design, use of standard sizes of materials, avoiding damage and wastage of materials purchased and prefabrication off site which could also help to reduce the generation of waste materials.



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