

June 2010

# Examiners' Report NEBOSH National Certificate in Environmental Management



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# Examiners' Report

## NEBOSH Certificate in Environmental Management

**JUNE 2010**

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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 Children, Education, Lifelong Learning and Skills (DCELLS) in Wales
- The Council for the Curriculum, Examinations and Assessment (CCEA) in Northern Ireland
- The Scottish Qualifications Authority (SQA) in Scotland

NEBOSH follows the “GCSE, GCE, VCE, GNVQ and AEA Code of Practice 2007/8” 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.

Candidates’ scripts 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 are failing because they 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.
- 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.

## UNIT NEC1 – Management and control of environmental hazards

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- Question 1**
- (a) **Identify FOUR** different ways an office-based company may affect the environment. (4)
- (b) **Describe FOUR** practical measures that such a company could consider in order to mitigate its potential damage to the environment. (8)
- (c) **Outline** the reasons why an organisation needs to manage its effects on the environment. (8)
- 

Most companies have an office function so this question is directly transferable to many businesses. Part (a) was looking for use of energy, paper and other resources, waste production, greenhouse gas emissions from energy use leading to global warming, excessive water use and similar activities that could affect the environment. Part (a) was very well answered, with most candidates achieving all 4 marks.

Part (b) was reasonably well answered, although some candidates struggled to identify four practical measures. Energy efficiency measures, waste minimisation measures, water efficiency measures, transport issues and purchasing practices were the most common answers. However, other examples could include flexible or home working practices, ethical sourcing of materials and education or training of employees.

Many candidates correctly addressed part (c) under legal, moral and economic reasons, although some struggled to identify sufficient subsidiary reasons to attract full or nearly full marks. Legal reasons include a general requirement to comply with the law and avoidance of sanctions or compensation. Moral reasons include a duty of care, meeting society's expectations and the need to progress to sustainable business. Economic reasons include cost savings through reduced bills for materials, energy and waste disposal, lower tax charges, supply chain pressures and relations with investors, insurance companies, etc.

Candidates generally answered all parts well.

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- Question 2** **Outline** the key actions that need to be taken to protect the environment in the event of a serious fire breaking out on industrial premises. (8)
- 

This proved to be a well answered question, with most candidates outlining a reasonable number of the necessary actions. Most important is to have an emergency plan in place which can be activated and a control centre established. The plan should help identify the actions required such as immediate contact with the emergency services, Environment Agency, local authority and effluent treatment company and alerting neighbouring premises. It should also contain drainage plans, and details of arrangements to contain fire water. Action will need to be taken on the ground to control the spread of the fire and to prevent water causing pollution in streams. Assessments of wind direction and the risk to ground water or of land contamination may be required. Thought also needs to be given to the disposal of all waste materials that result from containment as well as those damaged in the fire. Regular training and practice drills will help to ensure that if the worst happens the risks can be mitigated. Only a few candidates included effect of wind direction, general land contamination (eg through soakaways) and disposal of waste materials.

- 
- Question 3** (a) **Identify FOUR** means of generating energy other than from fossil fuels. (4)
- (b) **Outline** why alternative energy technologies need to be adopted. (4)
- 

This question was very well answered, with almost all candidates successfully identifying four suitable non-fossil fuel energy sources in part (a) from the wide choice available. These include solar heat or electricity, wind turbines, hydropower, wave and tidal power, geothermal, nuclear, biofuels, and combined heat and power.

In part (b), most candidates identified the need to reduce dependency on fossil fuels and reduce greenhouse gas emissions. Reductions in sulphur oxide and nitrogen oxide emissions came up a few times but other reasons such as the opportunity to reduce costs (especially if supported by grants or other incentives), energy security, lower pollution caused by the extraction or distribution of fossil fuels and the opportunities for new businesses and job creation, were not frequently mentioned.

- 
- Question 4** *Local residents are being kept awake at night due to noise emitted from ventilation fans at a nearby factory.*
- (a) **Outline** the civil actions that may be available to the residents. (6)
- (b) **Identify TWO** possible remedies that the courts could impose if the residents were successful in their action. (2)
- 

Part (a) was very poorly answered, with many candidates failing to get more than 1 mark, if any. Many candidates spoke about statutory action that might be taken under Environmental Protection Act 1990 Part III but that is not a civil action available to the residents. Instead they would initially have to complain to the factory but could follow up with actions under the tort of nuisance (public or private). They would have to demonstrate that the noise was causing unreasonable interference with their enjoyment of their land and that reasonable measures had not been taken to prevent a recurrence. An alternative would be to seek redress under the principle of negligence or breach of duty owed.

A few candidates discussed possible remedies under part (a) rather than part (b).

Part (b) was more successfully answered, with a reasonable number of candidates identifying injunctions or abatement notices, and damages or compensation as possible remedies. Many candidates, however, also referred to fines or prison sentences in part (b) but these are not civil remedies.

Many candidates are now clear about statute versus common law, and criminal versus civil law.

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- Question 5** (a) **Outline** the meaning of the term 'reactive monitoring'. (2)
- (b) **Outline THREE** issues that may be identified by reactive monitoring **AND outline** how these issues can be rectified. (6)
- 

This question was fairly poorly answered in general. Many candidates were unable to outline reactive monitoring which is monitoring undertaken in response to an incident or complaint – usually to investigate the causes and impact.

Whilst there were some good answers to part (b), with three relevant issues being quoted along with appropriate means of rectification, many candidates failed to quote satisfactory issues. Many candidates quoted issues that would be identified by routine proactive monitoring, rather than by reactive monitoring following an incident or complaint. The examiners were looking for issues such as lack of training, inadequate or complex procedures, inappropriate equipment, lack of maintenance, lack of understanding of an emergency plan or inadequate routine monitoring, with appropriate suggestions as to rectification. Credit was also given for issues such as noise complaints from neighbours and pollution of surface waters.

- 
- Question 6**     *Life cycle analysis (LCA) is growing in importance in environmental management.*
- (a)     **Outline** the principles of LCA.     (4)
- (b)     **Outline TWO** situations when an LCA study may be of benefit.     (4)
- 

This question was reasonably well answered by most candidates.

Many candidates mentioned the cradle to grave assessment of inputs and outputs, and direct or indirect impacts at different stages of a process from supply through manufacture and use to ultimate disposal. However, the other principles: the addition of environmental costs or burdens at each stage, the use of inventory analysis, interpretation and the need to get results into some measure of equivalence came up very infrequently.

In part (b) many candidates successfully identified the use of Life Cycle Analysis in product design or manufacturing to minimise overall impact. Fewer candidates mentioned supporting product claims and comparing one product choice against another (where the examples of disposable versus washable nappies, and glass versus plastic bottles were popular). No candidates mentioned supporting aspects assessment for ISO14001.

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- Question 7**     (a)     **Outline** how a bag filter works.     (4)
- (b)     **Give TWO** examples of pollutants which can be removed using a bag filter **AND identify** the appropriate process industry.     (4)
- 

The main feature of a bag filter is that the particles to be removed are larger than the pore size in the filter medium. This traps the particles on the filter and cleaned air passes through but as solids build up the flow rate is reduced. At some stage the filter has to be cleaned by agitation, reverse air pulse or just replacement. Candidates generally were able to outline most of this.

Bag filters are used to remove wood dust in saw mills or wood processing factories, metal dusts in engineering works, cement dust in manufacturing plants and textile fibres in mills and similar works. They can also be used for other powders such as flour.

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

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This proved to be a well answered question, with most candidates outlining a reasonable number of possible pollution sources. Common sources included surface water drainage contaminated by spills, sewage, cooling water, effluent discharges, wrong connections, inappropriate disposal of waste, spillages onto ground contaminating groundwater and fire water. Leaking drains, process water and solids such as grit and plastics featured relatively infrequently.

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**Question 9**     *An organisation is committed to achieving a target of recycling 50% of wastes arising from its manufacturing operations.*

(a)     **Outline** the performance monitoring information that the organisation should maintain to demonstrate that it has reached its target.     **(3)**

(b)     **Outline** the steps to be taken to improve on the target.     **(3)**

(c)     **Outline** why a target based on a percentage figure may be more appropriate than a target based on weight of waste recycled.     **(2)**

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This question was on the whole poorly answered.

In part (a) a few candidates successfully outlined the need to weigh all the waste produced on site and the weight sent to landfill or recycled. However virtually no one mentioned tracking waste data through time to establish trends and demonstrate movement towards or compliance with the target.

In part (b) most candidates were able to outline a couple of steps which would improve the target. Most frequently mentioned were waste segregation and treatment, training and the use of incentives and practical steps such as the use of more efficient equipment or identifying markets for recycled goods. Less frequently mentioned were, analysis of waste producing activities to allow targeting of measures to reduce total amount of waste and analysis of waste produced to identify new opportunities for recycling.

In part (c) many candidates described different waste streams 'weighing' different amounts (ie density differences), and failed to outline the effect of changing production volumes on the total waste arisings.

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**Question 10**     **Identify** the main ways in which contaminated land can pollute the environment.     **(8)**

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This question was generally well answered. Direct contact with the land, dust blowing or inhalation of gases are obvious routes to harm people and animals. Surface run off or groundwater infiltration can pollute water and wildlife and plants and crops may be damaged. Wildlife can also be harmed by ingesting contaminated foods or by bioaccumulation. There may be damage to buildings and services directly by corrosion, for example, or methane build up can cause explosion risks as well as global warming. Odours, visual impact and the economic losses resulting from future limited uses of the land could also be important.

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**Question 11** *Neighbours of a newspaper printing works have been complaining of the noise.*

**Identify FOUR** suitable methods of noise control **AND outline** how these may prevent the noise nuisance.

**(8)**

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This question was extremely well answered, with many candidates achieving full or nearly full marks. This was helped by the wide range of methods available. The principle ones were: isolation to keep doors closed and restrict access times; absorption of sound by acoustic linings on presses and walls; insulation by building an enclosure around the source; the use of damping mounts for the presses; regular maintenance to ensure plant is operating well; controlled hours of working and use of public address systems and controlling vehicle noise by routing and managing their use. Ultimately if these measures fail to solve the problem, the choice of new equipment with reduced noise production, planting trees or building a fence on the boundary and fitting double glazing to the residents' properties may be needed.



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