



NEBOSH NATIONAL DIPLOMA IN ENVIRONMENTAL MANAGEMENT

UNIT ED1

Introduction

This Supplement has been prepared to update your study material for the NEBOSH National Diploma in Environmental Management. You should read it in conjunction with your existing course material.

Element 1: Principles of Environmental Risk Management

Natural Cycles and Sustainability

Current Definitions of Sustainability

Resource Efficiency and Sustainability

In the **More** box at the end of this subsection, please delete the existing text and substitute the following:

“You can read more about resource efficiency on the WRAP website including guides and case studies at <http://www.wrap.org.uk/>.”

Principles of Environmental Hazard Identification, Risk Assessment and Control

Indirect Effects on the Health and Safety of People Outside the Workplace

Air Pollution

In the **Topic Focus** in this subsection, immediately before the last paragraph, please insert the following new paragraph:

“At the UN Climate Change Conference in Doha in November/December 2012, further decisions were made with regard to the international consensus on climate change. It was decided that the second commitment period for the Kyoto Protocol would be established. However, a number of countries who had signed up to the first commitment period - including Japan, Russia and Canada - announced that they would not participate. Those countries who are participating will encompass around 15% of global greenhouse gas emissions. The new commitment period will not legally enter into force unless it is ratified by three quarters of the Protocol parties, but those who have agreed have either agreed to provisionally participate or implement new commitments within their national laws by January 2013. The new commitment period is from 2013 until 2020. Discussions on other non-Kyoto-Protocol mechanisms for dealing with climate change were closed.”

Assessment of Environmental Risks

Sources of Information and Advice on Environmental Risks

Please delete the 3rd bullet point under this subheading and substitute the following:

- “WRAP – provides resources to help organisations eliminate and reduce waste.”

Then in the **More** box at the end of this subsection delete “Envirowise - <http://envirowise.wrap.org.uk/>.” and substitute “WRAP - <http://www.wrap.org.uk/>.”



Element 5: Developments in Environmental Legislation

Development of Environmental Law in the UK

Effects of International Agreements and Treaties on UK Environmental Law

In the table in this subsection, please delete the existing text in the **Subject** column concerning the **Kyoto Protocol** and substitute the following:

“This protocol is concerned with global warming gases. The first commitment period introduced individual, legally binding targets to cut greenhouse gases by 2008-2012, including a cut of up to 5% in comparison to 1990 levels. The second commitment period introduced targets amounting to a reduction in greenhouse gas emissions of 18% based on 1990 levels over the period of 2013 to 2020.”

Foreseeable Changes in UK Environmental Law

The Environmental Permitting (England and Wales) Regulations 2010

Immediately before the 2nd **Topic Focus** in this subsection, please amend the existing paragraph to read:

“In Scotland and Northern Ireland the equivalent legislation for installation environmental permitting is found in the **Pollution Prevention and Control (Scotland) Regulations 2012** and the **Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2012** respectively.”

Then delete the penultimate paragraph of the subsection and substitute the following:

“In other parts of the UK, similar laws are in operation. For example, in Scotland, the PPC regime under the **Pollution Prevention and Control (Scotland) Regulations 2012** remains in place, but places similar requirements on installation regulated facilities as in England and Wales. Similarly, in Northern Ireland, the PPC regime also continues to operate under the **Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2012**.”

Environmental Business Guidance

Please delete the existing text under this subheading and substitute the following:

“Free environmental guidance for businesses throughout the UK is provided by the Environment Agency, the Northern Ireland Environment Agency and the Scottish Environment Protection Agency through the following organisations:

- Gov.uk (UK).
- NI BusinessInfo (Northern Ireland only).
- Business Scotland (Scotland only).”

Then in the **More** box which follows, delete the existing bullet points and substitute the following:

- “Gov.uk (UK): <https://www.gov.uk/>.
- NI BusinessInfo (Northern Ireland only): <http://www.nibusinessinfo.co.uk/>.
- Business Scotland (Scotland only): <http://www.business.scotland.gov.uk/>.”



Element 6: Environmental Legislative Framework and Methods of Enforcement

Statutory Obligations

The Pollution Prevention and Control Act 1999 (PPC Act)

At the end of the 2nd paragraph under this subheading, please add the following:

“This Directive will be repealed on 7 January 2014 and replaced by **Directive 2010/74/EU** on industrial emissions (integrated pollution prevention and control).”

Associated Legislation

In the 1st paragraph under this subheading, please amend the last sentence to read:

“In Scotland, the Directive is implemented by the **Pollution Prevention and Control (Scotland) Regulations 2012**.”

Powers of Inspectors, Different Types of Enforcement Action

Roles of the Agencies

The Scottish Environment Protection Agency

In the 3rd paragraph under this subheading, please amend “**Pollution Prevention and Control (Scotland) Regulations 2000**” to read “**Pollution Prevention and Control (Scotland) Regulations 2012**”.

Northern Ireland Environment Agency (NIEA)

In the 3rd paragraph under this subheading, please delete the 1st sentence and substitute the following:

“The **Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2012** currently implement the IPPC and local authority air pollution control regime in Northern Ireland.”

Element 7: Public Access to Environmental Information

Information Available to the Public

Development and Scope of Public Registers

Environmental Permitting Regulations 2010

Please amend the 2nd paragraph under this subheading to read:

“Similar requirements for PPC permits are present in Scotland under the **Pollution Prevention and Control (Scotland) Regulations 2012**.”

Then delete the **More** box which follows.



Element 9: Solid and Liquid Wastes

Waste Categories

Specific Legal Requirements Applying to Each Category of Waste

Hazardous Waste

Under the subheading **Notification of Premises Producing Hazardous Waste**, please delete the existing paragraph (including the bullet points) immediately below the Jargon Buster (Consignor) and substitute the following:

“Premises are exempt from the requirement to notify, if less than 500 kg of hazardous waste is produced in any 12-month period. In a position statement, the Environment Agency has also stated that hazardous waste at the following locations will be exempt from notification requirements (and the need for a consignment note and a consignee return):

- Highways maintenance (e.g. gully cleaning following a spill).
- Highway spillages (e.g. section of a highway where a spill has occurred).
- Railway track.
- Waterways.
- Forests and other areas of countryside.”

Then insert the following **More** box:



More...

The hazardous waste regulatory position statement can be viewed at:

http://www.environment-agency.gov.uk/static/documents/Business/MWRP_RPS_025_v3_HWR_Defn_of_premises_-_Oct_2012.pdf?utm_medium=email&utm_source=Environment+Agency&utm_campaign=1799057_December%2c+Issue+13&utm_content=premisesHazwastemain



Minimising Waste and Effluents

Principles of Waste Minimisation and the Waste Hierarchy

Please delete the **More** box at the end of this subsection (immediately before the subheading **Prevention**).

Responsibilities under the Producer Responsibility Obligations (Packaging Waste) Regulations 2007

In this subsection, please delete the existing table entitled **UK Business Recovery and Recycling Targets** and substitute the following new table:

UK Business Recovery and Recycling Targets

Recycling	Paper/Card	2012	2013	2014	2015	2016	2017
	Glass	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%
	Glass (recycled by remelting)	-	63%	63%	63%	64%	64%
	Aluminium	40%	43%	46%	49%	52%	55%
	Steel	71%	72%	73%	74%	75%	76%
	Plastic	32%	37%	42%	47%	52%	57%
	Wood	22%	22%	22%	22%	22%	22%
Recovery	Total Recovery	74%	75%	76%	77%	78%	79%

Extension of the Producer Responsibility Concept

Directive 2002/95/EC of 27th January 2003 on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment

Please delete this entire subsection and substitute the following new subsection:

“Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment

Producer responsibility has also been applied to restricting hazardous substances in electrical and electronic equipment. The requirements are implemented under **Directive 2011/65/EU** on the Restriction of the use of certain hazardous substances in electrical and electronic equipment, which has been implemented in the UK by the **Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012**. These are known as the **RoHS Directive** and the **RoHS Regulations**.

The **RoHS Directive/Regulations** cover an extended range of electrical equipment from their predecessors. Such items as medical devices and industrial monitoring devices have been added to the scope of the Directive and Regulations in a staged way during the period 2014 to 2017.

The Regulations apply to equipment in the following categories, some of which are the same as the categories in the **WEEE Regulations**:

- Large household appliances.
- Small household appliances.
- IT and telecommunications equipment.
- Consumer equipment.
- Lighting equipment.
- Electrical and electronic tools (except large-scale stationary industrial tools).
- Toys, leisure and sports equipment.
- Medical devices (for *in vitro* diagnostic medical devices from 22 July 2016 and from 22 July 2014 for others).
- Monitoring and control instruments (from 22 July 2017 for industrial monitoring and control instruments and from 22 July 2014 for others).
- Automatic dispensers.
- Electric light bulbs.
- Luminaires for use in households.



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- Other EEE not covered by the above.

New EEE put on the market must not contain more than the permissible maximum concentration values of hazardous substances (note that the requirements for medical devices and monitoring and control instruments are being phased in as stated above). These are:

- 0.1% by weight in homogeneous materials for **lead**.
- 0.1% by weight in homogeneous materials for **hexavalent chromium**.
- 0.1% by weight in homogeneous materials for **mercury**.
- 0.1% by weight in homogeneous materials for **polybrominated biphenyls**.
- 0.1% by weight in homogeneous materials for **polybrominated diphenyl ethers**.
- 0.01% by weight in homogeneous materials for **cadmium**.

Any product that is CE marked is presumed to comply with the requirements of the **RoHS Regulations**. The producer is required to prepare technical documentation showing that EEE which he has put on the market complies with the **RoHS Regulations**."

Then insert the following **More** box:



More...

Take a look at the Department for Business, Innovation and Skills (BIS) guide to RoHS:

<http://www.bis.gov.uk/assets/biscore/business-sectors/docs/r/12-1167-restriction-of-hazardous-substances-regulations-guidance.pdf>.



Element 10: Gaseous and Particulate Releases to Atmosphere

Strategies for Monitoring Atmospheric Emission

Principles of a Monitoring Strategy

In this subsection, beneath the diagram entitled **Main Elements of a Monitoring Strategy**, please delete the existing source and substitute the following:

"Source: Adapted from Technical Guidance Note (Monitoring) M2, Monitoring of stack emissions to air, Environment Agency, 2013 (http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/LIT_6405_963ada.pdf)"

Then in the **More** box at the end of the subsection, delete "<http://publications.environment-agency.gov.uk/PDF/GEHO1211BVWU-E-E.pdf>," and substitute "http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/LIT_6405_963ada.pdf,".

Sampling Principles

Monitoring Approaches

In this subsection, beneath the table entitled **Important Characteristics of CEMs and Periodic Monitoring**, please delete the existing source and substitute the following:

"Source: Technical Guidance Note (Monitoring) M2, Monitoring of stack emissions to air, Environment Agency, 2013 (http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/LIT_6405_963ada.pdf)"

Then delete the table entitled **Particulate Matter Size Fractionation**¹ and its notes and source and substitute the following new table, notes and source:

32. Particulate matter size fractionation¹

Type of monitoring	Monitoring technique	Monitoring standard	Further information
Manual	Impaction based on a round nozzle two stage impactor	BS EN ISO 23210 ²	Allows simultaneous measurement of PM_{10} to > $PM_{2.5}$ concentrations using a cascade impactor. The standard does not measure the contribution of stack gas emissions to the formation of secondary particulate matter in ambient air. It was primarily developed for measurements of mass concentrations below 40 mg/m^3 at STP. However, it states that it is applicable for particulate concentrations between $1\text{-}50 \text{ mg/m}^3$. The standard also specifies limitations on stack gas temperature, pressure and humidity ² . It is suitable for combustion sources, cement and steel processes. It cannot be used to measure stack gases that are saturated with water vapour. It is not applicable to stack gases where the majority of particulates are greater than PM_{10}. It cannot be used for the measurement of total mass concentration of particulates.

¹ EA TGN M15 provides guidance on size fractionation measurements. It also provides further information on the use of BS EN ISO 23210. TGN M15 is available from www.mcerts.net

² For stack gas emissions with particulate concentration above 50 mg/m^3 the following is available: BS ISO 13271: Determination of PM 10/PM 2.5 mass concentration in flue gas - Measurement at higher concentration by use of virtual impactors

Source: Technical Guidance Note (Monitoring) M2, Monitoring of stack emissions to air, Environment Agency, 2013 (http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/LIT_6405_963ada.pdf)



ED1 Supplement

Element 11: Water Resources Management

Polluting Substances Released to Water

Designation of Controlled Waters and Water Protection Zones

Protection of Groundwater

At the end of this subsection, immediately before the subheading Water Protection Zones, please insert the following **More** box:



More...

A comprehensive Environment Agency guide, Groundwater Protection: Principles and Practice (GP3), can be downloaded from:

http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/LIT_7660_8cc42d.pdf.

Discharges To, Or Abstraction From, Controlled Waters

Discharge Consent Procedures for Trade Effluent and Red List Substances

In this subsection, in the More box immediately after the Topic Focus, please delete “<http://www.environment-agency.gov.uk/business/topics/water/32038.aspx>.” and substitute “http://www.environment-agency.gov.uk/business/topics/water/121308.aspx?utm_medium=email&utm_source=Environment+Agency&utm_campaign=1799057_December%2c+Issue+13&utm_content=waterdischargepermitmain.”

Element 13: Hazardous Substances

Supply, Storage, Use and Transport of Hazardous Substances

Prohibitions and Restrictions Affecting Supply and Use of Hazardous Substances

Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2008 (RoHS) (as amended)

Please delete all of this subsection and substitute the following new subsection:

“Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (RoHS)

These Regulations implement EU Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment. The RoHS Regulations ban the placing on the EU market of new Electrical and Electronic Equipment (EEE) that contains more than the stated levels of lead, cadmium, mercury, hexavalent chromium and both polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants.”



Element 14: Environmental Implications of Development and Land Use

Contamination of Soil and Groundwater

Methods of Investigating Contaminated Land and Groundwater

Requirements for Groundwater Protection under the Environmental Permitting (England and Wales) Regulations 2010

Please delete the 4th and 5th paragraphs under this subheading.

Then insert the following new subsection:

“Codes of Practice

Statutory Codes of Practice are issued on how to prevent pollution from activities where there is no deliberate disposal (and as such no requirement for an environmental permit). There is a Code of Practice for underground petrol and diesel tanks at petrol stations and fuel-dispensing facilities. This came into force in November 2002, with the aim of preventing leaks entering groundwater. The Code requires operators to carry out a risk assessment and if a significant risk is identified, to carry out improvements as agreed with the Environment Agency.

Codes of Practice on the use and disposal of sheep dip compounds and solvent use and storage are also available.”

Element 15: Energy Use and Efficiency

Reduction of Energy Use and Carbon Emissions

In the **Key Information** box at the beginning of this main section, please amend the 2nd bullet point to read:

- “The **Kyoto Protocol** requires developed countries to reduce their emissions by **18% compared to a 1990 baseline**. The Protocol is based on a ‘**cap and trade**’ mechanism.”

Energy Efficiency

Relationship to Cost and Profit

Immediately before the **More** box at the end of this subsection, please insert the following new subsection:

“Standards Covering Energy Management

Standards have been developed covering energy management. These include:

- BS EN 16231 *Energy efficiency benchmarking*, which gives organisations a methodology for collecting and analysing energy data that allows them to compare energy data with others (e.g. a facility, activity, process, service, organisation, etc.).
- BS EN 16247-1 *Energy audits* - a standard that covers the auditing of energy use that can assist an organisation to identify energy waste and so make improvements in energy efficiency and minimise energy consumption.”

International and National Control Strategies for Carbon Dioxide Emissions

In the **Topic Focus** at the beginning of this subsection, please delete the existing text and substitute the following:

“International Control Strategies

The Kyoto Protocol was agreed in December 1997 by the treaty parties in Kyoto, Japan and came into force in February 2005. By April 2008, 178 countries had ratified the treaty; 36 developed countries have to reduce greenhouse gas emissions to the level in the treaty, while developing countries, such as Brazil and China, have no emission reduction targets other than monitoring and reporting of emissions.

The first period of the Protocol required developed countries to reduce their greenhouse gas emissions by 5.2%. However, in comparison to 2010 emission levels without the Protocol, this represented a 29% reduction. The second phase of the Protocol requires developed countries to reduce their greenhouse gas emissions by 18% compared to a 1990 baseline.

The main objective is to lower the emission level of six greenhouse gases (known as the ‘basket’ of gases) - carbon dioxide, methane, nitrous oxide, sulphur hexafluoride, hydrofluorocarbons, and perfluorocarbons - averaged over 2013-2020.

National emission targets have been set and include:



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- EU – 20% reduction.
- Norway – 16% reduction.
- Switzerland– 15.8% reduction.
- Australia – 0.5% reduction.

Countries who have signed up to the second phase of the Kyoto Protocol represent around 15% of global greenhouse gas emissions with notable exceptions being the USA, China and Russia.

The Protocol is based on a '**cap and trade**' mechanism which imposes national caps on the emissions of developed countries. Such caps constitute national-level commitments, but the majority of countries have passed targets to individual industrial sites, such as power plants. One example of a 'cap and trade' system is the EU Emissions Trading System (see later in this element).

Clean Development Mechanism (CDM) and **Joint Implementation (JI)** projects act as sources of credits which can be accrued by developed countries. The CDM enables the collection of new carbon credits by participating in emission reduction projects in Non-Annex-I (developing) countries. JI allows project-specific credits to be converted from existing credits within Annex I countries.

Some non-Kyoto carbon markets are also in existence such as the Chicago Climate Exchange and the State of California carbon reduction targets.

The UK is a key signatory of the Kyoto Protocol and has developed many climate change initiatives. The **Climate Change Act 2008** was developed from the Energy White Paper 2003, with the aim of providing a framework for a mandatory 80% decrease in greenhouse gas emissions from the UK by 2050 in comparison with 1990 levels.

The **Climate Change Act 2008 (2020 Target, Credit Limit and Definitions) Order 2009** amended Section 5 of the Act to stipulate a mandatory 34% reduction in greenhouse gas emissions by 2020 (previously a 26% reduction in CO₂)."

National Control Strategies

In the subsection entitled **Ecodesign for Energy-Related Products Regulations 2010**, please add the following to the list of bullet points:

- "Water pumps."

Then in the subsection entitled **Energy Information Regulations 2011**, amend the dates for tumble driers and air-conditioners in the table to read:

"Tumble driers 1 January 2013"

"Air-conditioners 29 September 2013"

Emissions Trading

In the **Topic Focus** in this subsection, under the heading Emissions Trading, please amend the 1st sentence of the 1st paragraph to read:

"This is viewed by the EU as a significant tool with which to decrease greenhouse gas emissions and meet its Kyoto target of 20% below 1990 levels."

Then in the same **Topic Focus**, under the heading **The EU Emissions Trading System (EU ETS)**, delete all the existing text (including the subsection on **Aviation**), and substitute the following:

"This is a European system with the objective of reducing carbon dioxide emissions and mitigating climate change. It is implemented by **Directive 2003/87/EC** (establishing a scheme for greenhouse gas emissions allowance trading) and was significantly amended by **Directive 2009/29/EC** (improving and extending the greenhouse gas allowance trading scheme of the Community). The requirements are implemented in the UK legal system by the **Greenhouse Gas Emissions Trading Scheme Regulations 2012**.

The EU ETS allocates a price on carbon that companies use and creates a carbon market. The system has been operating since 2005 and was the first of its kind in the world.



The ETS for energy-intensive installations consists of phases and all member states must produce a National Allocation Plan (NAP) approved by the EU. Such plans must set an overall 'cap' on the sum of emissions allowed from facilities included in the system. This is converted to allowances, with one allowance being equal to one tonne of CO₂. Installations included within the system must monitor and report emissions. At the end of the year they must surrender allowances to account for the installation's individual emissions. Installations have flexibility within the system; they can use all or part of their allocation, and can 'trade' allowances by purchasing additional allowances or selling any extra they have accumulated by reducing emissions below their allocation.

The EU ETS installation requirements are relevant to energy-intensive organisations such as power stations, iron and steel manufacture, food and drink, engineering and vehicle manufacture. Such industries are identified by the Department of Energy and Climate Change to account for 43% of the CO₂ emissions in the UK. Specified installations with low emissions (in addition to installations that primarily supply services to a hospital) are allowed to opt out of the ETS if they put in place equivalent measures to limit their emissions.

The **Greenhouse Gas Emissions Trading Scheme (Nitrous Oxide) Regulations 2011** also allow for nitrous oxide (N₂O) from nitric acid production to be traded as well as carbon dioxide from energy-intensive industries.

Aviation

It has been estimated by the UK Government that aviation could contribute around a quarter of all the UK greenhouse gas emissions by 2030. Such concerns in the UK and other EU countries have resulted in aviation being included in the **ETS Directive** and its requirements being implemented in the UK by the **Greenhouse Gas Emissions Trading Scheme Regulations 2012**. All aircraft operators allocated to the UK that are part of the ETS had to apply to the UK regulator by 12 November 2009 for an emissions plan that identifies how their reportable CO₂ emissions will be determined. New operators must apply within eight weeks of becoming an aircraft operator. Regulators must issue an approved plan within four months of receiving the application.

Following approval the operators must report and monitor CO₂ and benchmark emissions in accordance with the approved plan.

The Regulations and Directive require that aviation operators undertake monitoring of their emissions of CO₂ in accordance with approved guidelines. For the first (2012) and second (2013 to 2020) period of trading an operator can apply for a free allowance allocation. Individual allocation will be based on the tonne kilometres flown over 2010. Every year from 2012 to 2020 the competent authority will issue the amount of allowance to each aircraft operator. If by the end of each year the operator does not possess sufficient allowances to cover annual CO₂ emissions, it will be required to purchase more. If the operator does not surrender sufficient allowances for every tonne of CO₂ that is emitted then a civil penalty will result."