

NEBOSH Environmental Diploma

Unit ED1 - Management of Environmental Risk

Introduction

This Supplement contains updates to your study material for Unit ED1 of the NEBOSH Diploma in Environmental Management. Please read it carefully.

Element 1: Principles of Environmental Risk Management

Principles of Environmental Hazard Identification, Risk Assessment and Control

Direct Effects on The Health and Safety of People Outside The Workplace

In the fourth paragraph under this subheading, “**Control of Major Accident Hazards Regulations 1999 (COMAH)**” has been updated to “**Control of Major Accident Hazards Regulations 2015 (COMAH)**”.

Hazardous Substances

The fifth paragraph under this subheading (immediately beneath the table) has been replaced by the following revised paragraph:

“The hazardous to the aquatic environment hazard pictogram identifies substances that are harmful to the aquatic environment. In practice, however, most substances labelled toxic, harmful, corrosive, etc. are also capable of harming the aquatic and other parts of the environment.”

The **CHIP** hazard symbol has been removed and the following pictogram relabelled:



Hazardous to the aquatic environment pictogram

Fire and Explosion

In the second paragraph under this subheading, “**Control of Major Accident Hazards Regulations 1999 (COMAH)**” has been updated to “**Control of Major Accident Hazards Regulations 2015 (COMAH)**”.

Element 3: Control Strategies for Environmental Risk

Development, Monitoring and Maintenance of Emergency Plans

This main section has been updated in accordance with the **Control of Major Accident Hazards Regulations 2015**. Please refer to your online material for the revised content.

Summary

In this main section, the eleventh and twelfth bullet points now read as follows:

- “Emergency plans are required for numerous laws, such as the **Environmental Permitting (England and Wales) Regulations 2010** and the **Control of Major Accident Hazards Regulations 2015 (COMAH)**.”
- An emergency plan may consist of two elements, an internal (on-site) and external (off-site) plan, although the two should be closely linked.”

Element 5: Developments in Environmental Legislation

Development of Environmental Law in the UK

Development Of ‘Framework’ Acts

The Environmental Protection Act 1990

The **List of Wastes (England and Wales) Regulations 2005** have been removed from the diagram in this subsection.

The Water Resources Act 1991

The **Bathing Water (Classification) Regulations 1991** have been removed from the diagram in this subsection.

Element 6: Environmental Legislative Framework and Methods of Enforcement

Exam Skills

Suggested Answer Outline

In the first paragraph of the answer to part (a), “**Control of Major Accident Hazards Regulations 1999**” has been updated to “**Control of Major Accident Hazards Regulations 2015**”.

Element 9: Solid and Liquid Wastes

Waste Categories

Principal Categories of Waste

In the **TOPIC FOCUS** box in this subsection, under the subheading **Hazardous Waste**, the existing paragraph has been amended to read as follows:

“This is defined by the **Hazardous Waste (England and Wales) Regulations 2005**. The European waste catalogue lists all wastes, including hazardous wastes.”

Classification of Waste – List of Wastes

The first sentence under this subheading has been amended to read:

“The List of Wastes (LoW) was established by the **List of Wastes Decision 2000/532/EC**.”

Specific Legal Requirements Applying to Each Category of Waste

Hazardous Waste

In the **MORE** box in this subsection, the text now reads:

“The UK environmental regulators have produced a useful guide on how waste material should be assessed to determine whether it should be treated as legally hazardous:

Waste Classification: Guidance on the classification and assessment of waste (WM3), available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427077/LIT_10121.pdf”

The sentence immediately below the **MORE** box now reads:

“The process described in guidance document WM3 is summarised on the following pages:”

The diagrams entitled “Hazardous Waste Assessment Methodology – Initial Assessment” and “Hazardous Waste Assessment Methodology – Mirror-Entry Assessment” have been removed and the text for Steps 1 to 5 has been replaced by the following:

“Step 1 - check if the waste needs to be classified

Only wastes that are classed as being covered by the Waste Framework Directive waste (controlled wastes in the UK) can be hazardous. These are commercial, industrial and household wastes.

Examples of materials that are excluded from the scope are radioactive wastes, decommissioned explosives, pollutants emitted to the atmosphere and waste waters.

Step 2 – identify the code or codes that may apply to the waste

The next step involves determining how the waste is classified in the List of Wastes, which consists of six-digit codes for waste types - these are known as European Waste Catalogue (EWC) codes. The most appropriate code(s) must be selected. The List of Wastes identifies the following wastes:

- Absolute non-hazardous waste - those entries that are given in black and have no *.
- Absolute hazardous entries - those that are given in red and have an *. These are always hazardous waste.
- Mirror hazardous entries - those that are given in blue and have an *. These are only hazardous waste if dangerous substances are present above threshold concentrations.
- Mirror non-hazardous entries – those labelled in green.

Mirror entries are those that are not automatically hazardous or non-hazardous waste. A hazardous mirror consists of a specific or general reference to a substance within its List of Wastes reference. Mirror references come in pairs, with the mirror hazardous entry stating the general reference to a dangerous substance. The non-hazardous mirror must be chosen if the hazardous mirror is not relevant and it is specified in the hazardous mirror – for example:

07 01 11* sludges from on-site effluent treatment containing dangerous substances MH

07 01 12 sludges from on-site effluent treatment other than those mentioned in 07 01 11 MN

Another example is:

17 03 01* bituminous mixtures containing coal tar MH

17 03 02 bituminous mixtures other than those mentioned in 17 03 01 MN

Step 3 - identify the assessment needed to select the correct code(s)

Now whether or not an assessment of the waste is needed and how this affects its classification needs to be determined. Whether an assessment is needed depends on the waste type.

If a waste is classed as an absolute entry then that code must be used. However, in order to determine whether a mirror entry is hazardous or non-hazardous and the correct code is thus selected, the levels of specific substances in the waste will need to be determined.

If a waste is classed as absolute non-hazardous then in most cases it will be non-hazardous and step 7 can be followed.

Step 4 - determine the chemical composition of the waste

In order to determine whether waste has properties rendering it hazardous, its composition must be determined to identify hazardous substances and their quantities. (This may be achieved by reference to safety data sheets, understanding fully the chemistry of the process that creates the waste, or through analysis.)

Step 5 - identify if the substances in the waste are 'hazardous substances' or 'Persistent Organic Pollutants'

After the chemical composition of the waste has been identified the next task is to determine whether any of the constituents are 'hazardous substances' or persistent organic pollutants (POPs).

The hazardous nature of the substance in the waste is determined by referencing Table 3.1 of Annex VI of the **European Regulation (EC) No. 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation)**.

POPs are environmental long lasting substances which can cause significant impacts on environmental health and include substances such as DDT, endrin, aldrine, toxaphene and polychlorinated biphenyls (PCBs).

If substances in the waste are identified as being 'hazardous' or POPs then step 6 should be followed. If no substances are found to be POPs or 'hazardous' then step 7 should be followed.

Step 6 - assess the hazardous properties of the waste

All hazardous properties of the waste must be considered (these are listed from HP1 to HP 15). Hazardous properties of the waste can be determined by calculation, testing or referencing the safety data sheet. At this stage the hazard statement codes for the substances in the waste should be understood and these can be used to determine the hazardous properties of the waste.

Step 7 - assign the classification code and describe the hazardous properties

For waste that has an absolute entry that classification code must be used and the waste is a hazardous waste. If the waste displays a hazardous property generally or those associated with specific hazardous substances, or contains POPs above set concentrations, then the waste is hazardous and the mirror hazardous code should be used. Where the waste does not consist of POPs or does not display a hazardous property then the mirror non-hazardous code can be used. If the waste is absolute non-hazardous then the absolute non-hazardous code must be used."

The table at the end of the subsection has been deleted.

Minimising Waste and Effluents

Disposal

Environmental Bodies Credit Scheme

The second paragraph in this subsection has been amended to read:

"Landfill site operators may claim a tax credit worth 90% of any contribution made to an enrolled environmental body for spending on an approved object, subject to a maximum credit of 5.7% of the landfill tax paid during the year."

Producer Responsibility – Batteries

The first sentence under this subheading has been updated to read:

"The **Batteries and Accumulators (Placing on the Market) Regulations 2008 (as amended)** partially implement **Directive 2006/66/EC (as amended)** on batteries and accumulators and waste batteries and accumulators ('The Batteries Directive')."

Element 11: Water Resources Management

Polluting Substances Released to Water

Designation of Controlled Waters and Water Protection Zones

Nitrate Vulnerable Zones (NVZs)

After the first paragraph, the remaining paragraphs in this subsection have been deleted and replaced by the following:

“The **Nitrate Pollution Prevention Regulations 2015** establish action programmes, which occupiers of farms within designated NVZs in England are required to implement to control nitrate leaching. Similar laws exist in Scotland under the **Protection of Water Against Agricultural Nitrate Pollution (Scotland) Regulations 1996 (as amended)** and the **Action Programme for Nitrate Vulnerable Zones (Scotland) Regulations 2008**. In Wales, similar requirements are present under the **Nitrate Pollution Prevention (Wales) Regulations 2013**.

Required measures (of which there are many) include:

- The Environment Agency must make recommendations to the Secretary of State regarding the designation of NVZs. The Secretary of State must also publish proposals with regard to the Environment Agency recommendations for designating NVZs - informing occupiers of holdings in those areas. A right of appeal for holdings in designated areas is also present.
- Except for certain crops, no manufactured (i.e. chemical) nitrogen fertilisers to be applied to land at certain times of the year. This depends on the land use, e.g. no application between 1 September and 15 January for tillage land.
- The maximum amount of nitrogen in livestock manure applied on the land must not exceed 170kg x area of land in hectares per year (i.e. no more than an average of 170kg per hectare).
- The total amount of nitrogen in organic manure spread over any given hectare must not exceed 250kg per annum.
- Subject to a few exemptions (e.g. for organic farmers), no applications of certain organic manures during specified periods. This depends on the soil and land use, e.g. no application between 1 September and 31 December for grassland with sandy or shallow soil type. This only applies to organic manures in which more than 30% of the nitrogen is ‘readily available’ nitrogen (so it’s in a form that is available to the crop immediately the manure is spread).
- No nitrogen fertilisers (so that includes organic manure as well as manufactured fertiliser) to be applied if soil is waterlogged, frozen, flooded or snow-covered.
- No manufactured fertilisers to be applied within 2m of surface water (within 10m for organic manure).
- Detailed records to be kept of fertiliser/manure.
- Records to be kept for five years.”

Discharges To, Or Abstraction From Controlled Waters

Duties to Prevent Pollution

Prevention of Pollution from Fire-Fighting Water Runoff

In the second paragraph under this subheading, “**Control of Major Accident Hazards Regulations 1999**” has been updated to “**Control of Major Accident Hazards Regulations 2015**”.

Element 13: Hazardous Substances

Supply, Storage, Use and Transport of Hazardous Substances

In the **KEY INFORMATION** box at the beginning of this main section, the first bullet point has been amended to read:

- “The **European Regulation (EC 1272/2008) on Classification, Labelling and Packaging of Substances and Mixtures (CLP)** covers the classification of substances and mixtures and identifies packaging and labelling requirements.”

The fourth bullet point has also been amended and now reads:

- “The **Control of Major Accident Hazards Regulations 2015 (COMAH)** require operators who store specific quantities of listed substances to take measures necessary to prevent or mitigate the effects of major accidents on people and the environment.”

Classification of Hazardous Chemicals

Under this subheading, the existing **TOPIC FOCUS** box on **Supply of Hazardous Chemicals** has been replaced by the following:

TOPIC FOCUS

Supply of Hazardous Chemicals

The **European Regulation (EC 1272/2008) on Classification, Labelling and Packaging of Substances and Mixtures**, abbreviated as **CLP**, contains a classification, labelling and packaging system, aligned to the United Nations' Globally Harmonised System (GHS).

Under **CLP** manufacturers and suppliers must:

- Classify dangerous chemicals using the new scientific criteria agreed under GHS.
- Provide information to the end user in the form of a label that will make use of new hazard warning symbols (pictograms) agreed under GHS.
- Package the chemical safely.

CLP fully replaced the UK classification system described by the **Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP)** in June 2015.

Material Safety Data Sheets

The text under this subheading has been updated to read as follows:

“In addition to the above requirements under **CLP**, dangerous substances and mixtures supplied to users must be accompanied by a **Safety Data Sheet**. This is a requirement of Article 31 of the **EU Regulation (EC 1907/2006) on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as amended**. Safety data sheets according to **amendment 2015/830** of **REACH** must contain the following sections (the amendment applies from 1 June 2015, with a transition period to 31 May 2017 for safety data sheets issued prior to that date):

- Section 1: Identification of substances/mixtures and of the company/undertaking.
- Section 2: Hazards identification.
- Section 3: Composition/information on ingredients.
- Section 4: First-aid measures.
- Section 5: Fire-fighting measures.
- Section 6: Accidental release measures.
- Section 7: Handling and storage.
- Section 8: Exposure controls/personal protection.

- Section 9: Physical and chemical properties.
- Section 10: Stability and reactivity.
- Section 11: Toxicological information.
- Section 12: Ecological information.
- Section 13: Disposal considerations.
- Section 14: Transport information.
- Section 15: Regulatory information.
- Section 16: Other information."

Also, the existing **TOPIC FOCUS** box on "**Dangerous for the Environment**" Classification has been replaced by the following:

TOPIC FOCUS

CLP consists of Hazard Statements and Precautionary Statements (covering prevention, response, storage and disposal) which are represented by H- and P- numbers respectively. Examples include:

- H401: Toxic to aquatic life.
- H410: Very toxic to aquatic life with long-lasting effects.
- H420: Harms public health and the environment by destroying ozone in the upper atmosphere.
- P273: Avoid release to the environment.
- P221: Take any precaution to avoid mixing with combustibles.
- P222: Do not allow contact with air.

Under **CLP**, specified hazard pictograms must also be used. These are in the shape of a red diamond with a white background, for example:



Hazardous to the aquatic environment pictogram

Requirements For Notification, Permits and Marking of Sites Where Hazardous Substances Are Present

Planning, Notification and Control of Hazardous Substances

This subsection has been replaced by the following revised subsection:

“Planning, Notification and Control of Hazardous Substances

Changes in the quantity of hazardous substances stored and changes in the use of hazardous substances within an installation that already has planning permission are not covered by the planning-permission arrangements. These changes are controlled through the **Planning (Hazardous Substances) Act 1990 and the Planning (Hazardous Substances) Regulations 2015. They implement land use planning obligations of the COMAH Directive (2012/18/EU).**

Applications to store or increase the quantity stored, or to change the nature of the processes involving certain specified chemicals must be made to the local planning authority. They will then consult relevant authorities, such as the Environment Agency and the HSE, before imposing storage and operating conditions. The quantities of specific hazardous substances that attract these Regulations are called the controlled quantities.

If, after consultation with the statutory consultees, the relevant authority is satisfied with the arrangements for storage and use of the hazardous substances, a Hazardous Substances Consent will be granted. Registers containing details of all hazardous substances applications, consents and decisions, including any conditions imposed, must be kept by the authority and made available to the public.

TOPIC FOCUS

The COMAH Regulations

The **Control of Major Accident Hazards Regulations 2015 (COMAH)** bring into force the requirements of **EU Directive 12/18/EU on the control of major-accident hazards involving dangerous substances**, amending and subsequently repealing **Council Directive 96/82/EC**. The Regulations apply to premises that keep or transport listed dangerous substances in quantities exceeding stated thresholds. They apply to premises that use substances that are flammable, explosive, toxic or dangerous to the environment. Operators of establishments where dangerous substances are present are required to take all measures necessary to prevent major accidents and limit their consequences for human health and the environment.

Companies to whom the Regulations apply must prepare and retain a written Major Accident Prevention Policy (MAPP), which should set out the operator’s principles of action and identify management roles and responsibilities and its commitment to continuous improvement of the control of major accident hazards.

Details of the types and quantities of listed hazardous substances that equal or exceed stated thresholds must be sent to the competent authority, and those sites that are ‘upper tier’ must send a Site Safety Report to the authority for approval.

COMAH gives equal importance to safety and environmental risks and, where practical, they have to be treated in an integrated way. Under **COMAH**, there is a requirement that a Site Safety Report is written that has the function of identifying major accident hazards on the site and which provides an estimation of the likely risks associated with the site and potential for major accidents that could affect the environment.

Where such risks are identified, an assessment must be undertaken to establish the consequences of the event in terms of the environment.

Should any sites have a designated protected status or sensitive receptors in the vicinity, this has to be taken into consideration. Emergency plans must include remediation and clean-up following an accident.

The Regulations are jointly enforced by the HSE and the Environment Agency as ‘the competent authority’. The Environment Agency is concerned principally with the assessment of the environmental aspects of **COMAH**.

The Regulations differentiate between those sites deemed to be of higher risk, according to the quantities of dangerous substances stored or used (upper tier), and lower-tier sites.

(Continued)

TOPIC FOCUS

Major Accidents

A major accident is described in **COMAH** as an occurrence (including a major emission, fire or explosion) resulting from uncontrolled developments at an establishment to which the Regulations apply and leading to serious danger to human health or to the environment, inside or outside the establishment, and involving one or more dangerous substances defined in the Regulations. All parts of this definition are necessary for an occurrence to be defined as a major accident.

Major accident evaluation depends on the event type, the event scale, the size and location of the affected area, the evaluation of event progression, and the potential harm to the population and the environment.

Major Accidents to the Environment (MATTEs)

An incident will be a major accident if it causes serious danger to the natural or built environment. The effects can be immediate or delayed but do not have to be irreversible. Consideration should be given to effects on the environment in general in addition to the risk of negative effects on rare or valued components of the environment. Details of site surroundings will form part of the safety report for upper-tier sites. Accidents that cause serious danger to the environment include those that result in:

- the death of or adverse effects on local populations of species or organisms, with lower thresholds for high-value or protected species;
- contamination of drinking water supplies, ground or groundwater;
- damage to designated areas, habitats or populations of species within the areas;
- damage to listed buildings;
- damage to widespread habitats;
- damage to the marine or aquatic environment.

The more extensive the areas and quantities of natural and semi-natural resources damaged, the longer the effects are likely to last; and the more intense or severe those effects, the more likely it is that the event will be regarded as a MATTE.

MORE...

Further information on **COMAH** can be found on the HSE website at <http://www.hse.gov.uk/comah/index.htm>

Summary

In this main section, the first bullet point has been amended to read:

- “The **CLP** regime covers the classification of substances and mixtures and identifies packaging and labelling requirements.”

The fourth bullet point has also been amended and now reads:

- “The **Control of Major Accident Hazards (COMAH) Regulations 2015** apply to premises that keep or transport listed dangerous substances in quantities exceeding stated thresholds.”

Element 15: Energy Use and Efficiency

Reduction of Energy Use and Carbon Emissions

International and National Control Strategies For Carbon-Dioxide Emissions

National Control Strategies

In the table in this subsection, “**Ecodesign for Energy-Related Products Regulations 2010**” has been updated to “**Ecodesign for Energy-Related Products Regulations 2010 (as amended)**” and “**Energy Information Regulations 2011**” to “**Energy Information Regulations 2011 (as amended)**”.

Suggested Answers to Revision Questions

Unit ED1 Element 9: Solid and Liquid Wastes

Question 1

The answer to part (c) now reads:

“Hazardous waste is a category of controlled waste, which includes toxic, corrosive, highly-flammable materials and pharmaceutical drugs.”