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TRAINING AND EVENTS FROM HSE

NEBOSH HSE Certificate in Process Safety Management

Qualification guide for Learners

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Version: 1
Specification date: October 2023
Publication date: March 2024

Registered Charity Number: 1010444

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Qualification overview

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Qualification key features

Unit prefixes and title/s	Unit PSM1: Process safety management	
Assessment	Assessment Type Multiple-choice examination	Assessment Time 90 minutes
Modes of study	Taught (face-to-face) Open, distance, part-time or block release eLearning	
Notional learning hours	Taught hours: 28 hours Private study hours: 20 hours Assessment: 1.5 hours Total hours: 49.5 hours	
Qualification level and number of credits	SCQF Level 7 with 5 credits (Comparable to RQF Level 4)	
Entry requirements	It is recommended that learners should already have an underpinning knowledge of health and safety issues, and many will have gained another NEBOSH qualification (such as a NEBOSH General Certificate).	
Recommended minimum standards of English	International English Language Testing System 6.0 or higher	
Languages available	English	
Assessment dates/ registration	Monthly fixed date examinations. Registrations can be made at any time pre-course and up to 10 working days from the assessment date.	
Pass standards	A 'Pass' (score of 60% or higher) must be achieved in Unit PSM1.	
Qualification grades	Pass Refer	
Parchment issue	Issued within 20 working days of the results declaration date	

Qualification summary

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Who is the qualification designed for?

It is designed for people who work in process industries such as oil and gas refining, chemicals, plastics and pharmaceuticals manufacturing. It is suitable for managers, supervisors, safety representatives and health and safety advisors working within the process industries, both inside and outside the UK.

It is not designed for chemical and process safety engineers experienced in the specification, design and maintenance of process plant.

Benefits for you

The NEBOSH HSE Certificate in Process Safety Management will provide you with a sound breadth of knowledge and understanding which will enable you to contribute to the management of process safety risks.

You will learn about:

- Process safety management system establishment
- Asset management and maintenance strategies
- Safe start-up and shutdown of process plant
- Performance standards for safety critical systems and equipment
- Hazards and controls for chemical reactions; bulk storage of dangerous substances; fire and explosion
- Purpose and features of emergency plans

Benefits for your employer

The process safety industry is high hazard, so having qualified people to manage activities within the industry will lead to safer workplaces. This will help to prevent loss of life, protect valuable assets and help organisations avoid prosecution, and ultimately loss of reputation.

People who hold the NEBOSH HSE Certificate in Process Safety Management have practical knowledge that brings real value, wherever they operate. This can help employers achieve international standards and can even help win new business.

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Notional learning hours

A programme of study needs to be based around a minimum of 28 taught hours and approximately 20 hours of private study for an overall total of 48 hours.

A full-time block release course would be expected to last for a minimum of four working days, and a part-time day release course would be spread over at least four weeks. Please contact your Learning Partner for more information on the structure of their course.

Finding where to study

You can search for Learning Partners (the people that provide your training course) using the 'Where to study' tab on the NEBOSH website. Our Learning Partners are based all over the world.

Note: it is best to check directly with the Learning Partner for up-to-date information on course dates.

Achieving the qualification

The qualification has one unit assessment: a 90 minute online multiple-choice assessment. Sample assessment questions are available to download from the NEBOSH website.

The question paper consists of 40 multiple-choice questions; 10 of which are extended scenario questions. Each question is worth one mark and has one correct and three incorrect responses available. The question paper covers the whole syllabus with at least one question per element. All questions are compulsory. It is a closed-book assessment, so you will not be able to refer to your course book and notes.

You must achieve a 'pass' (60% or higher) in order to be awarded the qualification.

Date of assessment

Assessments are taken after completion of the course learning. Assessments are held monthly, with the assessment being available for a 24 hour period. You will be able to start your assessment at any time during this 24 hour window, but will have 90 minutes in total to complete your assessment.

More information, including upcoming assessment dates are available on the NEBOSH website.

Registration

Your Learning Partner will register you for the PSM1 unit assessment. Registration can be made at any time pre-course delivery, and up to 10 working days post-assessment.

Submission of the assessment

You will complete your assessment online, and submit your assessment through an online assessment platform for marking.

Qualification summary

Marking

Your assessment is marked by NEBOSH. You will receive a 'Pass' (60% or higher) or 'Refer' (59% or lower) for your assessment. Your Learning Partner will provide you with more support in the event of a referral result, and register you for another date to re-sit your assessment.

Results

You will receive your results within 15 working days of sitting the examination. Once you have achieved a pass, a qualification parchment will be issued. This is normally within 20 working days of confirmation of the successful PSM1 unit.

Re-sitting units

You may re-sit your unit assessment if you were referred. There is no limit to the number of times you can re-sit a unit.

Individual learner feedback

For more information on the assessment feedback provided for this qualification, please visit the NEBOSH website.

"The NEBOSH HSE Certificate in Process Safety Management definitely enhanced my career. I started to look at safety at my facilities differently and made it my mission to increase everyone else's knowledge of process safety. It is integral to how my part of Biffa works, so this qualification had a huge impact for me and our operations – it was a win-win for all of us!"

- Nicola Curtis

Head of Health and Safety, Biffa

Syllabus

Syllabus

Syllabus

This syllabus and accompanying course book have been developed by NEBOSH in conjunction with Great Britain's Health and Safety Regulator, the Health and Safety Executive (HSE), and are based on published HSE guidance.

Syllabus summary

Element		Recommended tuition hours
1	Process safety management	4
2	Management process risk	9
3	Process safety hazard control	10
4	Fire and protection emergency response	5

Minimum unit tuition time **28**

Recommended private study time **20**

Syllabus

Learning outcome and assessment criteria

Learning outcome The learner will be able to:	Related Content	Assessment criteria
Advise on the difference between process safety and personal safety.	**1.1**	Define process safety and process safety management systems. Identify the differences between process safety and personal safety.
Advise on the importance of leadership in assigning roles, responsibilities and resources to improve safety standards and positively influence organisational culture.	**1.2**	Understand the role of leadership in process safety management.
Advise on the importance of organisational learning from lessons learned; accident and incident investigations; benchmarking standards; and sources of process safety information.	**1.3**	Give the purpose of sharing lessons learnt; accident and incident investigation findings; benchmarking standards; and sources of process safety information within an organisation.
Understand how 'change' should be managed to effectively reduce risks to people and plant.	**1.4**	Identify how change should be managed in order to effectively reduce risks to people and plant.
Help their organisation to understand the importance of worker and contractor consultation.	**1.5**	Identify the benefits and limitations of worker consultation in process safety. Define the roles and responsibilities of common worker consultation groups.
Advise on the importance of competence and training.	**1.6**	Define competence and its importance in process safety. Recognise the importance of training and development programmes in reducing process safety risk.

Syllabus

Learning outcome The learner will be able to:	Related Content	Assessment criteria
Understand the purpose and importance of establishing a process safety management system.	**2.1**	Identify the purpose and importance of establishing a process safety management system Define the key elements of a process safety management system and how they are applied.
Recognise common risk management techniques to reduce process safety risk.	**2.2**	Define the principles of the risk assessment process. Identify common risk management techniques and how they are applied in process industries.
Understand what effective asset management, plant maintenance and inspection strategies would consider.	**2.3**	Know the importance of asset integrity management. Recognise how effective maintenance strategies for process plant should be developed.
Understand the essential nature of permit-to-work systems, and the key features that they should contain.	**2.4**	Give the role, function and operation of a permit-to-work system.
Recognise how shift handovers should be safely managed.	**2.5**	Understand the key principles of safe shift handover.
Help their organisation manage contractors.	**2.6**	Provide the principles of selecting, assessing and managing contractors.
Advise how operating procedures should be written and applied.	**3.1**	Know the purpose and requirements of standard operating procedures.
Recognise suitable control measures for an organisation's start-up and shut-down processes.	**3.2**	Identify suitable control measures that should be applied to ensure the safe start-up and shut-down of process plant.

Syllabus

Learning outcome The learner will be able to:	Related Content	Assessment criteria
Understand the importance of performance standards for safety critical systems and equipment.	**3.3**	Identify the necessity for performance standards for safety critical systems and equipment. Define the concept of 'FARSI' and how it is applied.
Recognise hazards associated with the use of steam and water in the process industries; and suitable control measures to reduce risk.	**3.4**	Recognise the hazards associated with the use of steam and water within the process industries. Recognise suitable control measures that should be applied to reduce the risks associated with the use of steam and water within the process industries.
Recognise hazards associated with the use of electricity and static electricity in the process industries; and suitable control measures to reduce risk.	**3.5**	Recognise the hazards associated with the use of electricity and static electricity within process industries. Recognise suitable control measures that should be applied to reduce the risks associated with the use of electricity and static electricity within process industries.
Recognise the risks associated with dangerous substances in the process industries.	**3.6**	Recognise the physical forms of dangerous substances and how these can determine process risk.
Recognise hazards associated with chemical reactions; and suitable protective measures to mitigate the consequences of a thermal runaway reaction.	**3.7**	Recognise the hazards associated with chemical reactions. Recognise suitable protective measures that should be applied to mitigate the consequences of a thermal runaway reaction.

Syllabus

Learning outcome The learner will be able to:	Related Content	Assessment criteria
Recognise hazards associated with bulk storage of dangerous substances; and suitable control measures to reduce risk.	**3.8**	Recognise the hazards associated with the bulk storage of dangerous substances. Recognise suitable control measures that should be applied to reduce the risks associated with bulk storage of dangerous substances.
Recognise fire and explosion hazards within the process industries.	**4.1**	Identify how fire and explosions can occur in process industries.
Recognise suitable control measures to minimise the effects of fire and explosion in the process industries.	**4.2**	Give suitable control measures that should be applied to reduce fire and explosion risks.
Recognise dust explosion hazards; and suitable control measures to prevent and minimise explosion.	**4.3**	Identify the principles of dust explosion and how they can occur. Identify suitable control measures that should be applied to prevent and minimise explosion.
Contribute towards the development and maintenance of an organisation's emergency plan.	**4.4**	Give the purpose, features and requirements for the implementation of an emergency plan.

Glossary

Glossary

Term	Definition	Source
As low as is reasonably practicable (ALARP)	*ALARP means that the risk hasn't just been reduced, but is now at the lowest level that can be achieved without incurring disproportionate costs (costs can be financial, time, effort and inconvenience).*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3
Asset	*An item of equipment or an area of production plant.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3
Asset integrity	*The ability of the equipment (asset) to operate as intended effectively and efficiently over its entire lifespan while ensuring the health and safety of those exposed to it, including the environment.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3
Barriers	*Controls that can be put in place between the initiator (the triggering event) to either prevent if from happening or to mitigate the outcome. Also see Bow-Tie model and Hazard realisation.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3
Bow-Tie model	*Used with 'hazard realisation'. As you work through the hazard realisation then 'barriers' can be identified that can be placed between the initiator (the triggering event) to either prevent it from happening or to mitigate the outcome. These can be termed, 'lines of defence' or 'layers of protection' and are exactly that – actions that, if implemented, could prevent the initiating event from resulting in a release or harm, or mitigating the consequences should it occur.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3
Classification of hazardous places (zones)	*Hazardous places are classified in terms of zones on the basis of the frequency and duration of the occurrence of an explosive atmosphere: Zones 0-2 relate to gas/vapours/mists and Zones 20-22 to dusts.*	HSE Books, ISBN: 978-0-7176-6616-4 Dangerous substances and explosive atmospheres, Approved Code of Practice and guidance, L138

Glossary

Term	Definition	Source
Competence	*"The ability to undertake responsibilities and to perform activities to a relevant standard, as necessary, to ensure process safety and prevent major accidents. Competence is a combination of knowledge skills and experience and requires a willingness and reliability that work activities will be undertaken in accordance with agreed standards, rules and procedures".*	COMAH Competent Authority, Inspection of Competence Management Systems at COMAH Establishments (Operational Delivery Guide)
Contractor	*"A contractor is anyone you get in to work for you who is not an employee".*	HSE Books Managing contractors, A guide for employers, HSG159
Endothermic	*A reaction is called endothermic if energy (heat) is absorbed during the reaction.*	HSE Books, ISBN: 978-0-7176-1051-8 Designing and operating safe chemical reaction processes, HSG143
Exothermic	*A reaction is called exothermic if energy (heat) is released during the reaction.*	HSE Books, ISBN: 978-0-7176-1051-8 Designing and operating safe chemical reaction processes, HSG143
Explosion relief venting	*One or more deliberate points of weakness are included in process plant; it they are of suitable size and in the right place, they will safely vent an explosion with the plant.*	HSE Books, ISBN: 978-0-7176-2726-4 Safe handling of combustible dusts; Precautions against explosions, HSG103
Explosive	*A substance has the risk of exploding in the right mixture with oxygen and if sufficient energy is available.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3
Event tree analysis	*Used to evaluate the mitigation measures that will operate after an event. The process starts with an initiating event and works forward in time to see what protective measures will operate. Each control will either be a success or a failure and, in this way, branches are built up on tree.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3
Failure Mode and Effects Analysis (FMEA)	*A study often used to brainstorm how a component or a system might fail, the potential effects/consequences of those failures, existing safeguards against those failure modes and whether more should be in place.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3

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Term	Definition	Source
Flammable	*The property of a substance (usually gas or liquid (or the vapour above the liquid)) to ignite when sufficient energy is applied in the form of heat.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3
Flashpoint	*The minimum temperature at which a liquid, under specific test conditions, gives off sufficient flammable vapour to ignite momentarily on the application of an ignition source.*	HSE Books, ISBN: 978-0-7176-6616-4 Dangerous substances and explosive atmospheres, Approved Code of Practice and guidance, L138
Hazard and Operability (HAZOP) study	*An advanced risk assessment technique first used by Imperial Chemical Industries (ICI) in the UK in the 1960s. It is a very thorough analysis of a process to identify ways in which the process could deviate from its design intention, in order for controls to be developed. It is usually chaired by an independent HAZOP leader and involves a multidisciplinary team of designers, engineers, safety professionals, operators in the area and other specialists.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3
Hazard Indentification (HAZID)	*A structured, team-based approach to identify hazards, their potential consequences, and requirements for risk reduction before changes are made to existing processes and plant. This is sometimes carried out during a workplace inspection but can be carried out at a desk using software. A HAZID study considers the process safety hazards as well as the non-process hazards such as transport and manual handling. These hazards are then used to feed the risk assessment process.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3
Hazard realisation	*In hazard realisation, the assessor looks at 'the worst-case scenario' to understand the potential consequences of the hazard so that controls can be implemented in the form of barriers.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3
Lagging indicators	*Reactive measures that look at failures such as the number of injuries, near misses and spills which are reported, or excursions where plant is operated outside of the intended operational envelope.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3

Glossary

Term	Definition	Source
Leading indicators	*Proactive measurements of conditions that monitor process safety management before something goes wrong and to see if things are operating as intended.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3
Lower explosion limit (LEL)	*The minimum concentration of vapour in air below which propagation of a flame will not occur in the presence of an ignition source. Also referred to as the lower flammable limit or lower explosive limit.*	HSE Books, ISBN: 978-0-7176-6616-4 Dangerous substances and explosive atmospheres, Approved Code of Practice and guidance, L138
Oxidising	*The property of a substance to readily accept electrons from another substance.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3
Permit-to-work system	*A formal recorded process used to control work which is identified as potentially hazardous. It is also a means of communication between site/installation management, plant supervisors and operators and those who carry out the hazardous work.*	HSE Books Guidance on permit-to-work systems, A guide for the petroleum, chemical and allied industries, HSG250
Process safety	*A blend of engineering and management skills focused on preventing catastrophic accidents and near misses, particularly structural collapse, explosions, fires and toxic releases associated with loss of containment of energy or dangerous substances such as chemicals and petroleum products. These engineering and management skills exceed those required for managing workplace safety.* *(Adapted from Centre for Chemical Process Safety of the American Institute of Chemical Engineers)*	'Process Safety and the ISC' (June 2014) CCPS, Guidelines for Process Safety Metrics (John Wiley and Sons, 2009) ISBN: 978-0-470-57212-2
Safe operating envelope	*The limits of the operating conditions under which a process can take place safely. Typically, process limits are established by setting upper and lower levels for a range of parameters.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3

Glossary

Term	Definition	Source
Safe operating procedure / Standard operating procedure (SOP)	*A document step-by-step instruction on how to conduct specific parts of the operating process. It sets out the way a certain task or activity is done so that mistakes which might lead to a situation where the safe operating envelope could be breached are avoided. The overall purpose of the SOP is to identify and maintain the operating parameters such as pressure limits, temperature range, flow rates etc at the required safe level.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3
Shift handover	*The terms used to describe the transfer of information between a shift of workers who are leaving work and incoming new shift of workers.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3
Thermal runaway reaction	*A reaction that is out of control because the rate of heat generation by an exothermic chemical reaction exceeds the rate of cooling available.*	HSE Books, ISBN: 978-0-7176-1051-8 Designing and operating safe chemical reaction processes, HSG143
Upper explosion limit (UEL)	*The maximum concentration of vapour in air above which the propagation of a flame will not occur. Also referred to as the upper flammable limit or the upper explosion limit.*	HSE Books, ISBN: 978-0-7176-6616-4 Dangerous substances and explosive atmospheres, Approved Code of Practice and guidance, L138
What-if analysis	*In 'what-if' analysis of risk realisation, the assessor asks, "what-if" and then digs deeper to look at the true potential of an incident.*	NEBOSH Process Safety Management Book ISBN: 978-1-913444-43-3