



The specification for:
**Level 3 Award in Hydrogen Safety
Practises**

The Award in Hydrogen Safety Practises qualification aims to recognise individuals already working in the Gas and Hydrogen infrastructure industry in their ability to demonstrate their comprehension of maintaining safety standards and recognising the importance of safety in hydrogen-related work. This qualification encompasses the necessary knowledge to ensure a secure working environment in the presence of hydro-gen.

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The Regulated Qualifications Framework (RQF) was designed by the UK government's Qualifications and Curriculum Development Agency now replaced by Ofqual. The RQF is referenced to the European Qualifications Framework devised by the European Union

The assessment model for the qualifications presented in this publication was designed by TLM in consultation with Andy Lord founder and CEO of WAWWA

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1. For those in a hurry!

Please read the rest of the book later as the details are important!

- 1.1 TLM's assessment model is common to most of its qualifications. It is based on competence-based assessment of coursework using a portfolio of evidence and supported by a free optional cloud-based evidence management system.
- 1.2 Learners must demonstrate competence against the assessment criteria from their day to day work and the teacher assessor must verify that they are competent in relation to the general level descriptor using indicative assessment criteria. TLM's external moderator will check the judgements and the quality of the evidence and provide feedback. This process is not graded, the intention is that it is a flexible way of checking basic practical competence in the subject at the qualification's framework level.

Procedures

- 1.3 The first thing to do is to arrange assessor training with TLM. TLM trains at least one assessor as Principal Assessor who must accept responsibility for standards within the Centre. The Principal Assessor can train and appoint assessors within the Centre as long as they are competent to take on the work and are willing to sign an agreement on the web site to uphold standards.
- 1.4 TLM will provide initial training in the pedagogical model and using the supporting technologies to provide the evidence needed. The purpose is to get you started and then we provide on-going support to ensure you are confident and we can work as a professional partnership. We advise new Centres to do some coursework assessment early so that they can receive feedback and quickly become confident in doing routine coursework assessment. Our aim is to make this no more onerous than normal routine assessment that anyone would do as a normal part of the teaching job. This gives more time to focus on teaching and therefore to support raising attainment.

2. Introduction

The Level 3 Award in Hydrogen Safety Practises is designed to support professionals in the Gas and Hydrogen infrastructure industry in demonstrating their understanding in how to maintain standards and understand the needs to be safe when working with hydrogen. Covering the knowledge needed to work safely within this dangerous environment.

They give learners the opportunity to:

- engage in learning that is relevant to them and that will provide opportunities to develop a range of skills and techniques, personal skills and attributes essential for safe working practises
- achieve a nationally-recognised Level 3 qualification
- develop their own personal growth and engagement in learning.

2.1 Level 3 Award in Hydrogen Safety Practises

The objective of the qualification is to prepare learners with the knowledge and confidence to develop their own skills.

Mandatory

Unit 1 – Hydrogen Fundamentals (3 credits).

Unit 2 –Hydrogen Safety (3 credits)

3. Summary of Qualification Specification

3.1 Level 3 Award (Annexe A)

The Level 3 award is a qualification designed to support professionals in, or striving to work within the Gas and Hydrogen infrastructure industry in demonstrating their understanding in how to maintain standards and understand the needs to be safe when working with hydrogen. Covering the knowledge needed to work safely within this dangerous environment.

Qualification Title: Level 3 Award in Hydrogen Safety Practises

Qualification Number: 610/3053/3

Qualification Level: Level 3

Total Credits: 6

Guided Learning Hours: 40

Total Qualification Time: 60

Assessment Methods: Coursework, E-assessment, Portfolio of Evidence

Assessment

Learners must demonstrate competence against the assessment criteria from their communication and involvement with the training materials and the trainer assessor must verify that they are competent in relation to the general level descriptor using indicative assessment criteria. TLM's external moderator will check the judgements and the quality of the evidence and provide feedback. This process is not graded, the intention is that it is a flexible way of checking basic practical competence in the subject at the qualification's framework level.

Mandatory Unit: Unit 1 – Hydrogen Fundamentals (2 credits).

Mandatory Unit: Unit 2 - Hydrogen Safety (3 credits)

3.5 Assessment

The internally assessed, externally moderated coursework for all qualifications is pass/fail but by submitting the evidence for external moderation, feedback can be given to the teacher on areas to improve for resubmission.

Evidence must be provided against the unit assessment criteria from practical tasks related to the learners' everyday work supported by teacher observations, portfolio completed, and or activities inline with the learning materials

The way evidence is gathered is up to the assessor, the only requirement is that it clearly supports the judgements against the assessment criteria and the relevant learning outcomes.

If on moderation the account manager finds gaps in evidence relating to a particular candidate, they will request more evidence before approving the award or the unit certificate. Assessors must then adjust their work to ensure all their learners are providing the appropriate level and breadth of evidence.

We encourage early submission of at least some evidence so that assessors are confident from the feedback that what they are providing is sufficient. In this way we can maintain standards while supporting improved efficiency.

4. Qualification Content



Mandatory	Optional (for reference)
1 CREDITS	None
Unit 1 Hydrogen Fundamentals (2 credits). Unit 2 Hydrogen Safety (3 credits)	



5. Support

Guidance and Assistance

- 6.1 There is further guidance for coursework assessment on the TLM web site. All centres have an assigned Account Manager who will be pleased to help at any time. Our aim is to give professional assessors, most of whom are qualified teachers, the confidence to make judgements with a minimum of bureaucracy so that they can focus their time on maintaining their professional knowledge, skills and supporting learning through effective teaching rather than “chasing paper”. There is often a confusion between bureaucracy and rigour, since unnecessarily complex bureaucracy can actually detract from rigour by obscuring the importance of the outcomes.
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- 6.2 **Web sites** - TLM provides support through cloud-based systems. Providing assessment grades and the management of certification through the Markbook Site is mandatory and all assessors are provided with training in its use. It is simply a matter of recording learner competence against the unit criteria as the evidence is collected and claiming a certificate on behalf of the learner when a unit has been fully assessed.
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- 6.3 The **community learning site** provides free optional facilities for learners to submit their evidence on-line, linking it to the assessment criteria across single or multiple units. The assessor can accept or reject this evidence and comment on it providing a full audit trail for evidence. Moderator/verifiers can get immediate access to this evidence and so it is potentially a lot more efficient than alternative methods. No paper, no e-mails with file attachments necessary. There are facilities for progress tracking that can be based on criteria and/or units. The system can be linked as an extension to any standards compliant VLE/e-portfolio system for centres that are already committed to a specific VLE product. Training can be provided, and free support is available from your Account Manager. The aim is to eliminate all paper-based bureaucracy, all screen-shots and referencing that draws time away from teaching.
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- 6.4 **Telephone** and e-mail support are available to all Centres. There is a general convention of `firstname.secondname@tlm.org.uk` for e-mail addresses. It is usually best to e-mail your account manager in the first instance. Google hangouts can be arranged for video conferencing support.
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6. Registration & Procedures

Registration

- 7.1 TLM's registration model allows centres to enter learners at times convenient to them. There are no late entry fees and no additional fees should a learner fail to produce evidence at a level but can meet the criteria at a lower level. This can reduce costs to the centres when compared to other qualifications

There are no fees for replacement certificates or verification of certificates because all certificates can be directly authenticated against TLM's secure database. For details of current subscription costs please contact us or refer to the web site.

Internal standardisation

- 7.2 The Principal Assessor has the ultimate responsibility for consistency in assessment standards within a centre. All assessors have signed a contract agreeing to uphold standards and should therefore co-operate with the Principal Assessor and Account Manager at TLM to ensure that standards across the centre are consistent.

It is advisable to send work samples to TLM early to check that evidence is at the right standard so that there is time to make any adjustments necessary to the course and learner expectations.

TLM will generally check a higher quantity of work from new assessors and feedback to ensure that they are confident to make appropriate judgements over time. This reduces risk and improves efficiency in the longer term.

Authentication

- 7.3 All assessors must take reasonable steps to ensure that any coursework evidence submitted by candidates is a true reflection of the candidates' competence. This is in keeping with the assessor undertaking to uphold and maintain standards in the contract with TLM.
- 7.4 Certificates can be authenticated directly on-line using the certificate number or by scanning the QR code on the certificate. There is no charge and it makes it more likely that certificates will be checked and that in turn improves security. Certificate forgeries are a significant problem when authentication is not simple and straightforward because convincing forgeries are easy to achieve with recent technologies and will get easier as time goes on.

7. Other Considerations

Access arrangements and special requirements

- 8.1 All TLM's qualifications are intended to be accessible, as widely as possible. There is an extensive policy documented on the web site at <https://tlm.org.uk/policy-download-centre/>. Centres should contact TLM if they have any questions related to accessibility issues.

Language

- 8.2 The language for provision of this qualification is English only. This will only change if we have a significant demand in another language that is sufficient to cover the additional costs involved.

Malpractice

- 8.3 TLM has comprehensive policies and procedures for dealing with malpractice. These are documented with links on the web site at <https://tlm.org.uk/policy-download-centre/>. Assessors should be familiar with these policies and make them clear to candidates. Assessors should inform their account manager if they suspect any instance of malpractice that could have a material effect on the outcome of any assessments, either for themselves or colleagues. This is part of the upholding of standards that is part of the contract with TLM.

Equality of opportunity

- 8.4 TLM promotes equality of opportunity through policies and procedures. These are again documented in detail on the web site at <https://tlm.org.uk/policy-download-centre/>.

Resources, Support and Training

- 8.5 A clear goal is to enable learners to support all their IT user needs using resources freely and legally available from the internet. This is related directly to national policies for inclusion and equality of opportunity. The reality is that there is so much user dependence on proprietary applications that we can only support the transition to free and open resources through education and common sense.
- 8.6 TLM does not require centres to use Free and Open Source applications but it certainly encourages them to do so. Most of the key software applications needed to support any of the assessed units are available freely from the web including office suites, graphics and sound editing. As a nation we could save hundreds of millions if not billions of pounds in software licensing fees by providing users with the skills, knowledge and confidence to migrate to free and open source applications. You Tube, OpenClipart.org, Wikipedia and many other sites provide free content that supports learning and the number and range of such sites is increasing.

Annexe A

Level 3 Award in Hydrogen Safety Practises - Unit assessment - coursework guidance

The **Level 3 learner** has knowledge and understanding of facts, procedures and ideas in an area of study or field of work to complete well-defined tasks and address straightforward problems. Holder can interpret relevant information and ideas. Holder is aware of a range of information that is relevant to the area of study or work.

AND/OR

Holder can select and use relevant cognitive and practical skills to complete well-defined, generally routine tasks and address straightforward problems. Holder can identify how effective actions have been. Holder can identify, gather and use relevant information to inform actions.

Moderation/verification: The assessor should keep a record of assessment judgements made for each candidate and make notes of any significant issues for any candidate. They must be prepared to enter into dialogue with their Account Manager and provide their assessment records to the Account Manager through the on-line mark book. They should be prepared to provide evidence as a basis for their judgements should it be required by the Principal Assessor or their Account Manager/external moderator. Before authorising certification, the Account Manager must be satisfied that the assessor's judgements are sound.

General Information

The Level 3 qualification has the following characteristics for learners:

- Achievement at RQF level 3 (EQF Level 4) reflects the ability to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. It includes taking responsibility for completing tasks and procedures and exercising autonomy and judgement subject to overall direction or guidance.
 - Use understanding of facts, procedures and ideas to complete well-defined tasks and address straightforward problems. Interpret relevant information and ideas. Be aware of the types of information that are relevant to the area of study or work.
 - Complete well-defined, generally routine tasks and address straightforward problems. Select and use relevant skills and procedures. Identify, gather and use relevant information to inform actions. Identify how effective actions have been.
 - Take responsibility for completing tasks and procedures subject to direction or guidance as needed.
- The specification for the Level 3 award provides an outcome framework for assessment and is not intended to dictate any particular context for learning and so can be used with any age range of adults.

Requirements

- Standards must be confirmed by a trained Level 3 Assessor
- Assessors must as a minimum record assessment judgement as entries in the on-line mark book on the TLM certification site.
- It is expected that there will be routine evidence of work used for judging assessment outcomes in the candidates' records of their day to day work. Samples, including related plans and schemes of work should be available at the annual visit and/or by video conference.
- Different approaches to learning will be required in order to match differing needs, for example, the needs of learners will be different from the needs of those with learning disabilities.
- When the candidate demonstrates secure capability against each of the criteria in the unit, they are entitled to a certificate for passing the unit and the overall award.
- We expect at least 8 hours of guided study to be under-taken for the certificate for complete beginners generally new to formal education, but discretion can be used to take account of prior learning where this is sensible in individual cases. In terms of making the certificate, what matters is outcomes. Can the candidate securely meet the criteria?

Certificates must be printed as per the TLM markbook with no alterations unless written consent if given by TLM.

Mandatory Unit 1 – Level 3, Unit 1 – Hydrogen Fundamentals

1. Understand the production and properties of hydrogen	2. Understand the requirement for safe storage and transportation of hydrogen	3. Understand current hydrogen policies and the benefits of hydrogen adoption
1.1 I can explain the characteristics and behaviour of hydrogen.	2.1 I can identify the safety concerns in transporting hydrogen.	3.1 I can describe the key climate and energy targets and how they relate to hydrogen.
1.2 I can explain what an energy carrier is.	2.2 I can describe the challenges for hydrogen storage and transportation.	3.2 I can identify any relevant regulations and legislation that relate to hydrogen as an energy carrier.
1.3 I can describe how hydrogen can be classed as an energy carrier	2.3 I can describe regulatory requirements for storing or transporting hydrogen.	3.3 I can describe the potential of including hydrogen as part of an energy infrastructure.
1.4 I can explain how hydrogen compares to other energy carriers	2.4 I can describe the safety protocols needed when transporting or storing hydrogen.	3.4 I can explain the challenges for the use of hydrogen.
1.5 I can explain the benefits of hydrogen as an energy carrier		3.4 I can explain the opportunities for the use of hydrogen.
1.6 I can explain the processes for hydrogen production.		

Mandatory Unit 2 – Level 3, Unit 2 – Hydrogen Safety

1. Know the principles of risk assessment in the context of safe storage and transportation of hydrogen.	2. Know the importance of safe manual handling in the workplace, specifically in relation to the storage and transportation of hydrogen	3. Understand the risks to health associated with working with hydrogen	4. Know the importance of working around hydrogen safely.
1.1 I can explain the objective of conducting risk assessments and method statements specifically for hydrogen storage and transportation.	2.1 I can explain the reasons for prioritizing safe manual handling in the workplace, particularly when dealing with hydrogen storage and transportation	3.1 I can identify the primary categories of substances classified as hazardous to health according to current regulations.	4.1 I describe the potential ways in which injuries can occur due to the movement and storage of hydrogen
1.2 I can explain the legal obligations regarding risk assessments and method statements related to hydrogen storage and transportation.	2.2 I can identify the potential injuries and health issues that can arise from improper manual handling techniques in the context of hydrogen-related activities.	3.2 I can describe the common health risks that can arise when working with hydrogen	4.2 I can explain the significance of having safeguards in place near areas where plant, machinery, and equipment are being used for hydrogen-related activities.
1.3 I can explain the consequences of failing to prevent accidents and illnesses in the workplace during hydrogen storage and transportation activities.	2.3 I can describe the responsibilities of employees as stipulated by current legislation and official guidance	3.3 I can explain the significance of proper storage practices for combustibles and chemicals.	4.3 I can describe the various methods to eliminate or control risks associated with working around plant, machinery, or equipment used for storage and transportation of hydrogen
1.4 I can identify typical hazards and potential risks associated with hydrogen storage and transportation	2.4 I can explain the importance of utilising site safety equipment while handling materials and equipment associated with hydrogen storage and transportation	3.4 I can describe the various types of personal protective equipment (PPE) that should be used when handling hazardous materials in order to mitigate risks to health.	4.4 I can identify the hazard warning signs and symbols commonly used when operating, working with, or in close proximity to hydrogen-related activities.

Teacher Guidance Notes

Level 3, Unit 1 – Hydrogen Fundamentals

1.1: I can explain the characteristics and behaviour of hydrogen.

Introduce the fundamental properties of hydrogen, such as its atomic number, atomic mass, and position in the periodic table.

Discuss the physical characteristics of hydrogen, including its colour, Odor, and state at standard conditions.

Explain the chemical properties of hydrogen, such as its reactivity, flammability, and its ability to form compounds with other elements.

Emphasize the importance of understanding hydrogen's behaviour in various contexts, such as its role in chemical reactions and its application as an energy carrier.

1.2: I can explain what an energy carrier is.

Define the concept of an energy carrier as a substance or system that can store, transport, or deliver energy from one place to another.

Give examples of common energy carriers, such as fossil fuels, electricity, and hydrogen.

Highlight the importance of energy carriers in enabling the efficient distribution and utilization of energy resources.

1.3: I can describe how hydrogen can be classified as an energy carrier.

Explain how hydrogen can store and release energy through various processes, such as combustion, fuel cells, and chemical reactions.

Discuss how hydrogen's ability to convert energy into different forms (e.g., electrical, thermal) makes it suitable as an energy carrier.

Illustrate the potential applications of hydrogen as an energy carrier, including transportation, electricity generation, and energy storage.

1.4: I can explain how hydrogen compares to other energy carriers.

Compare hydrogen to other commonly used energy carriers, such as fossil fuels and electricity.

Highlight the advantages and disadvantages of hydrogen compared to these energy carriers, considering factors such as efficiency, environmental impact, availability, and versatility.

Encourage students to analyse the strengths and weaknesses of hydrogen as an energy carrier in different contexts.

1.5: I can explain the benefits of hydrogen as an energy carrier.

Discuss the environmental benefits of hydrogen, such as its potential to reduce greenhouse gas emissions and contribute to a more sustainable energy system.

Explain the versatility of hydrogen as an energy carrier, its potential for integration with renewable energy sources, and its ability to provide energy in various sectors.

Highlight the potential economic benefits of a hydrogen-based energy system, including job creation, energy security, and reduced dependence on fossil fuels.

1.6: I can explain the processes for hydrogen production.

Introduce different methods of hydrogen production, such as steam methane reforming, electrolysis, and biomass gasification.

Discuss the advantages, disadvantages, and applications of each production method.

Explain the importance of considering factors such as energy efficiency, cost-effectiveness, and environmental impact when choosing hydrogen production processes.

2.1: I can identify the safety concerns in transporting hydrogen.

Discuss the properties of hydrogen that contribute to safety concerns, such as its flammability and potential for explosion.

Explain the importance of handling hydrogen with caution and adhering to safety guidelines to prevent accidents and minimize risks.

Identify specific safety concerns related to hydrogen transportation, such as leakages, ignition sources, and the potential for hydrogen embrittlement.

2.2: I can describe the challenges for hydrogen storage and transportation.

Discuss the unique challenges associated with hydrogen storage, such as its low density, the need for high-pressure containers, and the requirement for cryogenic temperatures in liquid hydrogen storage.

Explain the challenges in transporting hydrogen, including the need for specialized infrastructure, the potential for hydrogen leakage during transportation, and the difficulties in ensuring adequate safety measures.

2.3: I can describe regulatory requirements for storing or transporting hydrogen.

Discuss the existing regulations and standards governing the storage and transportation of hydrogen.

Explain the role of regulatory bodies, such as safety agencies and transportation authorities, in establishing guidelines and enforcing compliance.

Discuss specific regulatory requirements, such as certifications, permits, labelling, and safety inspections that are necessary for hydrogen storage and transportation.

2.4: I can describe the safety protocols needed when transporting or storing hydrogen.

Explain the importance of implementing safety protocols when handling and transporting hydrogen to ensure the protection of individuals, property, and the environment.

Discuss safety measures, such as leak detection systems, safety valves, grounding, and bonding procedures, and emergency response plans.

Emphasize the significance of training and education for personnel involved in the storage and transportation of hydrogen to ensure they are knowledgeable about safety protocols and procedures.

3.1: I can describe the key climate and energy targets and how they relate to hydrogen.

Introduce the concept of climate and energy targets, such as those outlined in international agreements (e.g., Paris Agreement) or national energy policies.

Explain how hydrogen can contribute to achieving these targets, such as reducing greenhouse gas emissions, promoting renewable energy integration, and supporting a transition to a low-carbon economy.

Provide specific examples of how hydrogen can be used in sectors like transportation, industry, and power generation to help meet climate and energy goals.

3.2: I can identify any relevant regulations and legislation that relate to hydrogen as an energy carrier.

Discuss the existing regulations and legislation that pertain to the production, storage, distribution, and use of hydrogen as an energy carrier.

Identify specific laws or policies at the national, regional, or international level that support or govern the deployment of hydrogen technologies.

Encourage students to research and analyse the impact of regulatory frameworks on the adoption and integration of hydrogen as an energy carrier.

3.3: I can describe the potential of including hydrogen as part of an energy infrastructure.

Explain the concept of an energy infrastructure and its components, such as generation, storage, distribution, and consumption.

Discuss the potential role of hydrogen in an energy infrastructure, including its ability to store energy, balance intermittent renewable sources, and provide clean energy for various applications.

Highlight the importance of integrating hydrogen into existing energy systems and infrastructure, as well as the need for investment, technological advancements, and policy support to realize its potential.

3.4: I can explain the challenges for the use of hydrogen.

Identify and discuss challenges associated with the use of hydrogen, such as high production costs, limited infrastructure, technological barriers, and safety concerns.

Explore the challenges related to scaling up hydrogen production, storage, and distribution to meet the demands of different sectors.

Encourage students to consider economic, technical, and societal challenges, as well as potential solutions and ongoing research efforts to overcome these barriers.

3.5: I can explain the opportunities for the use of hydrogen.

Highlight the potential opportunities presented by hydrogen as an energy carrier, such as its versatility, potential for decarbonization, and ability to integrate with renewable energy sources.

Discuss the economic opportunities associated with hydrogen technologies, including job creation, innovation, and the development of new industries.

Explore potential applications of hydrogen in sectors like transportation, heating and cooling, energy storage, and industrial processes, and their potential positive impacts on sustainability and energy security.

Level 3, Unit 2 – Hydrogen Safety

1.1: I can explain the objective of conducting risk assessments and method statements specifically for hydrogen storage and transportation.

Discuss the importance of risk assessments and method statements in ensuring the safe storage and transportation of hydrogen.

Explain that the objective of conducting risk assessments is to identify and evaluate potential hazards and risks associated with hydrogen storage and transportation activities.

Highlight that method statements outline the safe procedures and protocols to be followed during these activities, providing guidance on how to mitigate identified risks.

1.2: I can explain the legal obligations regarding risk assessments and method statements related to hydrogen storage and transportation.

Introduce relevant legislation and regulations that require risk assessments and method statements for hydrogen storage and transportation activities.

Explain that legal obligations vary by jurisdiction but generally aim to protect the health and safety of workers, the public, and the environment.

Discuss the consequences of non-compliance, including potential legal penalties and reputational damage for organizations.

1.3: I can explain the consequences of failing to prevent accidents and illnesses in the workplace during hydrogen storage and transportation activities.

Discuss the potential consequences of accidents and illnesses in the workplace, such as injuries, fatalities, property damage, and environmental harm.

Explain the potential impact on individuals, organizations, and society as a whole, including financial costs, legal implications, and reputational damage.

Emphasize the importance of proactive risk management and the implementation of safety measures to prevent accidents and illnesses.

1.4: I can identify typical hazards and potential risks associated with hydrogen storage and transportation.

Identify and discuss typical hazards associated with hydrogen storage and transportation, such as leaks, fire, explosions, asphyxiation, and hydrogen embrittlement. Explain the potential risks and consequences of these hazards, including the potential for injuries, damage to infrastructure, and environmental pollution. Encourage students to consider site-specific factors and contextualize hazards and risks in different scenarios, such as hydrogen storage facilities, transportation routes, and refuelling stations.

2.1: I can explain the reasons for prioritizing safe manual handling in the workplace, particularly when dealing with hydrogen storage and transportation.

Discuss the importance of safe manual handling in preventing injuries and promoting the overall well-being of workers. Explain that safe manual handling practices are especially crucial in the context of hydrogen storage and transportation due to the potential hazards associated with the substance. Emphasize that proper manual handling techniques can reduce the risk of accidents, such as drops, spills, or collisions, which could result in hydrogen leaks, explosions, or other dangerous situations.

2.2: I can identify the potential injuries and health issues that can arise from improper manual handling techniques in the context of hydrogen-related activities.

Identify potential injuries that may result from improper manual handling, such as strains, sprains, fractures, and musculoskeletal disorders. Discuss the health issues that can arise from repetitive manual handling tasks, including long-term injuries and chronic pain. Highlight the importance of considering the specific risks associated with hydrogen-related activities, such as the risk of exposure to hydrogen gas or the potential for hydrogen-related accidents due to mishandling.

2.3: I can describe the responsibilities of employees as stipulated by current legislation and official guidance.

Explain that employees have legal responsibilities to protect their own health and safety, as well as that of their colleagues and others affected by their work. Discuss current legislation and official guidance related to manual handling and workplace safety, emphasizing the duties and obligations of employees. Provide examples of specific responsibilities, such as following safe working procedures, using appropriate equipment, reporting hazards or injuries, and cooperating with employers to maintain a safe working environment.

2.4: I can explain the importance of utilizing site safety equipment while handling materials and equipment associated with hydrogen storage and transportation.

Discuss the importance of using site safety equipment as a means to reduce the risk of accidents and injuries. Explain the specific safety equipment and personal protective equipment (PPE) relevant to hydrogen storage and transportation activities, such as gloves, safety glasses, appropriate footwear, and respiratory protection. Emphasize the importance of proper training and familiarization with site safety equipment to ensure its effective use in mitigating risks.

3.1: I can identify the primary categories of substances classified as hazardous to health according to current regulations.

Introduce the concept of hazardous substances and their classification based on current regulations and guidelines, such as Globally Harmonized System of Classification and Labelling of Chemicals (GHS) or local regulatory frameworks. Identify the primary categories of hazardous substances, such as flammable, corrosive, toxic, carcinogenic, and environmentally hazardous substances. Provide examples of specific substances within each category, highlighting their potential health risks and associated hazards.

3.2: I can describe the common health risks that can arise when working with hydrogen.

Discuss the potential health risks associated with working with hydrogen, such as asphyxiation, burns, and explosion hazards.

Explain the importance of understanding the properties and characteristics of hydrogen in order to mitigate these risks.

Emphasize the significance of proper training, adherence to safety protocols, and the use of appropriate protective measures to prevent or minimize health risks.

3.3: I can explain the significance of proper storage practices for combustibles and chemicals.

Highlight the importance of proper storage practices to prevent accidents, spills, leaks, and exposure to hazardous substances.

Explain the specific considerations for storing combustibles and chemicals, such as the need for adequate ventilation, segregation of incompatible substances, and appropriate labelling and signage.

Discuss the potential consequences of improper storage, including fires, explosions, and environmental contamination.

3.4: I can describe the various types of personal protective equipment (PPE) that should be used when handling hazardous materials in order to mitigate risks to health.

Introduce different types of personal protective equipment (PPE) commonly used when handling hazardous materials, such as gloves, goggles, respirators, protective clothing, and footwear.

Explain the specific purpose and functions of each type of PPE in mitigating risks to health.

Discuss the importance of selecting the appropriate PPE based on the hazards present and ensuring proper fit, maintenance, and disposal of PPE.

4.1: I can describe the potential ways in which injuries can occur due to the movement and storage of hydrogen.

Discuss the potential ways in which injuries can occur during the movement and storage of hydrogen, such as accidents involving transport vehicles, mishandling of containers, leaks, fires, and explosions.

Explain the importance of understanding the hazards and risks associated with hydrogen movement and storage to prevent injuries and accidents.

Emphasize the significance of following safety procedures and protocols to minimize the potential for injury.

4.2: I can explain the significance of having safeguards in place near areas where plant, machinery, and equipment are being used for hydrogen-related activities.

Discuss the importance of having safeguards in place near areas where plant, machinery, and equipment are used for hydrogen-related activities.

Explain that safeguards can include physical barriers, safety interlocks, emergency shutdown systems, and adequate signage to prevent unauthorized access and mitigate risks.

Highlight the role of safeguards in protecting workers, equipment, and the environment from potential hazards and accidents.

4.3: I can describe the various methods to eliminate or control risks associated with working around plant, machinery, or equipment used for storage and transportation of hydrogen.

Discuss various methods to eliminate or control risks associated with working around plant, machinery, or equipment used for hydrogen storage and transportation.

Explain the importance of conducting risk assessments, implementing engineering controls, and utilizing administrative measures to mitigate risks.

Provide examples of risk control methods, such as proper maintenance of equipment, regular inspections, training programs, and safe work practices.

4.4: I can identify the hazard warning signs and symbols commonly used when operating, working with, or in close proximity to hydrogen-related activities.

Introduce commonly used hazard warning signs and symbols related to hydrogen-related activities.

Explain the meaning and significance of these signs and symbols, such as warning signs for flammable materials, high-pressure areas, or hazardous substances.

Discuss the importance of recognising and understanding these warning signs and symbols to ensure safety during hydrogen-related activities.