TLM Level 1 Award in Introduction to Hydrogen Safety Practises

The Introduction to Hydrogen Safety Practises qualification aims to assist individuals in the Gas and Hydrogen infrastructure industry, whether already working or aspiring to do so, by demonstrating their comprehension of maintaining safety standards and recognizing the importance of safety in hydrogen-related work. This qualification encompasses the necessary knowledge to ensure a secure working environment in the presence of hydrogen.

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

The Learning Machine Ltd, Unit 4D Gagarin, Lichfield Road Industrial Estate, Tamworth, Staffordshire, B79 7GN (www.theingots.org)

Table of Contents

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 tutor 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 1 Award in Introduction to Hydrogen Safety Practises is 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.

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 1 qualification
- develop their own personal growth and engagement in learning.

2.1 **Level 1 Award in Introduction to 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 (2 credits).
Unit 2 – Introduction to Hydrogen Safety (3 credits)

3. Summary of Qualification Specification

3.1 **Level 1 Award (Annexe A)**

The Level 1 Award is a qualification designed to enhance and develop learners' life skills and build their confidence with an engaging learning journey.

Qualification Title: TLM Level 1 Award in Introduction to Hydrogen Safety Practises
Qualification Number: 610/3051/X
Qualification Level: Level 1
Total Credits: 5
Guided Learning Hours: 30
Total Qualification Time:50
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 - Introduction to 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 tutor 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 tutor 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 formative assessment 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.

Centres will be subject to the TLM Centre Assessment Standards Scrutiny (CASS) and further details of this, including our centre guidance, is freely available on the TLM website in our Policy Download Centre. https://tlm.org.uk/policy-download-centre/

4. Qualification Content

Mandatory	Optional (for reference)
5 CREDITS	**Samples Shown**
Unit 1 Hydrogen Fundamentals (2 credits). **Unit 2** Introduction to Hydrogen Safety (3 credits)	None

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 tutors, 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.
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.
6.3	The **community learning site** provides free optional facilities for learners to submit their evidence online, 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.
6.4	**Telephone** and e-mail support are available to all Centres. There is a general convention of first-name.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.

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 1 Award in Introduction to Hydrogen Safety Practises - Unit assessment - coursework guidance

The **Level 1 learner** has the ability to use relevant knowledge, skills and procedures to complete routine tasks. It includes responsibility for completing tasks and procedures subject to direction or guidance 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 1 qualification has the following characteristics for learners:

- Achievement at RQF level 1 (EQF Level 2) reflects the ability to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks 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 routine tasks. Use relevant skills and procedures.
- Select and use relevant information. Identify whether actions have been effective. Take responsibility for completing tasks and procedures subject to direction or guidance as needed.

- The specification for the Level 1 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 7 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?

Mandatory Unit 1 – Level 1, 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 identify the characteristics and behaviour of hydrogen.	2.1 I can identify the safety concerns in transporting hydrogen.	3.1 I can identify the key climate and energy targets and how they relate to hydrogen.
1.2 I can describe what an energy carrier is.	2.2 I can identify 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 identify hydrogen as an energy carrier.	2.3 I can identify regulatory requirements for storing or transporting hydrogen.	3.3 I can identify the potential of including hydrogen as part of an energy infrastructure.
1.4 I can compare hydrogen to other energy carriers.	2.4 I can identify the safety protocols needed when transporting or storing hydrogen.	3.4 I can identify the opportunities and challenges for the use of hydrogen.
1.5 I can identify the processes for hydrogen production.		

Mandatory Unit 2 – Level 1 Unit 2 - Introduction to 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 describe the objective of conducting risk assessments and method statements specifically for hydrogen storage and transportation.	2.1 I can identify the reasons for prioritising 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 can list the potential ways in which injuries can occur due to the movement and storage of hydrogen
1.2 I can identify 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 list the common health risks that can arise when working with hydrogen	4.2 I can identify 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 identify the responsibilities of employees as stipulated by current legislation and official guidance	3.3 I can identify the significance of proper storage practices for combustibles and chemicals.	4.3 I can list 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 identify the importance of utilising site safety equipment while handling materials and equipment associated with hydrogen storage and transportation	3.4 I can identify 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 1, Unit 1 – Hydrogen Fundamentals

1.1 I can identify the characteristics and behaviour of hydrogen:

Introduce hydrogen as a chemical element and its position in the periodic table.

Explain that hydrogen is the lightest and most abundant element in the universe.

Discuss its properties, such as being colourless, odourless, and highly flammable.

Conduct simple experiments to demonstrate its properties, like lighting a hydrogen-filled balloon to show its flammability.

1.2 I can describe what an energy carrier is:

Introduce the concept of energy carriers by explaining that they are substances or devices that store, transport, or deliver energy.

Give examples of common energy carriers like batteries, gasoline, and natural gas.

Explain that energy carriers are used to power various devices, machines, and vehicles.

1.3 I can identify hydrogen as an energy carrier:

Explain that hydrogen can be used as an energy carrier because it can store and release large amounts of energy.

Discuss how hydrogen can be used in fuel cells to produce electricity, powering vehicles and other devices.

Highlight the environmental benefits of hydrogen as an energy carrier, as it produces only water vapor when used.

1.4 I can compare hydrogen to other energy carriers:

Discuss the advantages and disadvantages of hydrogen compared to other energy carriers like fossil fuels and batteries.

Emphasise the renewable nature of hydrogen and its potential to reduce greenhouse gas emissions.

Encourage students to think critically about the pros and cons of hydrogen as an energy carrier.

1.5 I can identify the processes for hydrogen production:

Explain different methods of hydrogen production, such as steam reforming, electrolysis, and biomass conversion.

Discuss the sources of hydrogen, including natural gas, water, and renewable energy sources.

Show diagrams or videos to illustrate the processes involved in hydrogen production.

2.1 I can identify the safety concerns in transporting hydrogen:

Begin by discussing the importance of safety when dealing with hydrogen as a highly flammable gas.

Explain that hydrogen needs to be transported with caution to prevent accidents or incidents.

Highlight potential safety concerns, such as leaks, explosions, or ignition sources.

2.2 I can identify the challenges for hydrogen storage and transportation:

Discuss the challenges associated with storing and transporting hydrogen, such as its low density and the need for specialized infrastructure.

Explain that hydrogen needs to be compressed or liquefied to reduce its volume for storage and transportation.

Highlight the importance of proper storage containers and transportation methods to maintain safety.

2.3 I can identify regulatory requirements for storing or transporting hydrogen:

Introduce the concept of regulations and standards for handling and transporting hazardous materials like hydrogen.

Discuss the role of regulatory bodies in setting safety guidelines and requirements for hydrogen storage and transportation.

Provide examples of regulatory agencies involved in ensuring safe practices, such as the Health and Safety Executive (https://www.hse.gov.uk/)

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

Explain the importance of following safety protocols and guidelines to prevent accidents or incidents.

Discuss safety measures such as leak detection systems, pressure relief devices, and safety training for handling hydrogen.

Emphasise the need for proper ventilation and the avoidance of ignition sources during hydrogen storage and transportation.

Understand current hydrogen policies and the benefits of hydrogen adoption:

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

Introduce the concept of climate and energy targets and explain their importance in addressing environmental challenges.

Discuss global initiatives like the Paris Agreement or local policies aimed at reducing greenhouse gas emissions.

Explain how hydrogen can contribute to achieving these targets by being a clean and renewable energy carrier.

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

Discuss regulations and legislation that promote the use of hydrogen as an energy carrier, such as government incentives or emission reduction targets.

Explain the role of regulatory bodies in creating policies and guidelines to support hydrogen adoption.

Provide examples of countries or regions that have specific regulations or legislation related to hydrogen.

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

Explain the concept of an energy infrastructure and its importance in delivering energy to communities.

Discuss the potential of hydrogen to complement existing energy systems, such as integrating hydrogen into electricity grids or using it for heating and transportation.

Highlight the benefits of a diversified energy infrastructure that includes hydrogen, such as reducing dependence on fossil fuels and supporting a transition to clean energy.

3.4 I can identify the opportunities and challenges for the use of hydrogen:

Discuss the opportunities that arise from adopting hydrogen as an energy carrier, such as reducing greenhouse gas emissions and creating new economic sectors.

Highlight the challenges associated with hydrogen adoption, such as cost, infrastructure development, and public acceptance.

Encourage students to think critically about the benefits and challenges of hydrogen adoption and consider potential solutions.

Level 1, Unit 2 – Introduction to Hydrogen Safety

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

Begin by explaining the importance of conducting risk assessments and method statements to ensure safety in the workplace.

Discuss the specific focus on hydrogen storage and transportation, highlighting the potential hazards and risks involved.

Explain that the objective of these assessments is to identify and mitigate risks to prevent accidents and ensure safe practices.

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

Introduce the concept of legal obligations and regulations in relation to workplace safety.

Explain that there are specific regulations and legal requirements regarding risk assessments and method statements for hydrogen storage and transportation.

Discuss regulatory bodies or agencies responsible for enforcing these obligations, such as occupational safety and health administration authorities.

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 failing to ensure safety during hydrogen storage and transportation.

Explain that accidents or illnesses can lead to injuries, property damage, or even loss of life.

Emphasise the importance of prevention through proper risk assessments, method statements, and adherence to safety protocols.

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

Discuss typical hazards and potential risks related to hydrogen storage and transportation.

Examples may include leaks, explosions, fire hazards, as well as risks associated with handling and storing high-pressure gas.

Explain that these hazards and risks need to be identified, assessed, and controlled to ensure the safety of workers and the surrounding environment.

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

Explain the importance of safe manual handling in the workplace to prevent injuries and ensure the well-being of employees.

Discuss the specific focus on safe manual handling when dealing with hydrogen storage and transportation due to the potential risks involved.

Emphasise that proper techniques and practices can reduce the likelihood of accidents and improve overall workplace safety.

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:

Discuss potential injuries and health issues that can result from improper manual handling techniques in hydrogen-related activities.

Examples may include strains, sprains, back injuries, or musculoskeletal disorders.

Explain the importance of using correct lifting, carrying, and handling techniques to minimize the risk of such injuries.

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

Explain that employees have responsibilities to ensure their own safety and the safety of others in the workplace.

Discuss the specific responsibilities outlined in current legislation and official guidance regarding manual handling and workplace safety.

Highlight the importance of following instructions, receiving proper training, and reporting any safety concerns to supervisors or designated personnel.

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

Explain the significance of using appropriate safety equipment in the workplace, particularly when handling materials and equipment related to hydrogen storage and transportation.

Discuss examples of site safety equipment, such as gloves, goggles, safety harnesses, or lifting aids.

Emphasise that the use of safety equipment can help protect employees from potential hazards and reduce the risk of injuries.

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

Explain that certain substances are classified as hazardous to health due to their potential to cause harm or illness.

Discuss primary categories of hazardous substances, such as flammable materials, corrosive substances, toxic chemicals, and irritants.

Introduce the concept of hazard symbols and labels used to identify hazardous substances.

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

Discuss common health risks associated with working with hydrogen, such as inhalation of hydrogen gas leading to asphyxiation, fire hazards, or explosion risks.

Highlight the importance of following safety protocols to prevent such health risks.

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

Explain that proper storage practices are essential to prevent accidents and protect individuals from hazardous materials.

Discuss the significance of storing combustible materials away from ignition sources and storing chemicals in appropriate containers, following specific guidelines.

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

Introduce the concept of personal protective equipment (PPE) as equipment worn to protect against specific hazards.

Discuss various types of PPE used when handling hazardous materials, such as gloves, safety goggles, respiratory masks, and protective clothing.

Emphasise the importance of selecting and using the appropriate PPE for the specific hazards associated with handling hazardous materials.

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

Discuss potential ways in which injuries can occur during the movement and storage of hydrogen, such as improper handling leading to leaks, accidental ignition causing fires or explosions, or hazards related to high-pressure systems.

Highlight the importance of understanding and following proper safety protocols to prevent such injuries.

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

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

Discuss the role of safeguards in preventing accidents, ensuring the safe operation of equipment, and protecting individuals working in those areas.

4.3 I can list 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.

Examples may include conducting regular maintenance, providing proper training for operators, implementing safety procedures, and using protective barriers or interlocks.

Emphasise the importance of risk assessment and following safety guidelines to minimize potential hazards.

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 common hazard warning signs and symbols used in the UK when operating, working with, or being in close proximity to hydrogen-related activities.

Explain the meaning and significance of these signs and symbols, such as warning signs for flammable materials, high-pressure systems, or electrical hazards.

Encourage students to recognize and understand these signs and symbols for their own safety.