

GAS TEST ATMOSPHERES

Learner Workbook (Formative training)

TRAINER'S MARKING GUIDE

MSMWHS217 –
Gas test atmospheres



This resource was developed by



Table of Contents

Contact Details	2
Training support materials	4
Application	4
Knowledge Training Tasks	5
Score for knowledge training	19
Practical Training	20
Practical training instructions	20
Practical training tasks	21
Training Summary – Competency Sign Off	25

1. Prepare for gas testing



Question 1 (PC 1.1)

You are preparing for gas testing. How do you find out the type of gas/atmosphere to be tested?

Answer may include but is not limited to:

- Consult safety data sheets (SDS)
- Talk to supervisors or safety personnel
- Assess the work environment
- Review industry standards and regulations
- Consider the nature of the task
- Review work orders and job instructions
- Seek expert advice
- Use gas detection equipment



Question 2 (PC 1.1)

What are some typical gases you might find in confined spaces?

Answer may include but is not limited to:

- Oxygen (O₂)
- Hydrogen sulfide (H₂S)
- Methane (CH₄)
- Carbon monoxide (CO)
- Ammonia (NH₃)
- Carbon dioxide (CO₂)
- Volatile organic compounds (VOCs)
- Nitrogen dioxide (NO₂)
- Chlorine (Cl₂)
- Dust and particulate matter



Question 6 (PC 1.3)

You are preparing for gas testing. How do you find out the gas testing regime/sampling pattern required?

Answer may include but is not limited to:

- Know your purpose
- Identify the gases
- Check the rules
- Learn from experts
- Assess dangers
- Pick sampling spots
- Choose testing methods
- Decide how often
- Ensure accuracy
- Train your team
- Review and update
- Keep records
- Get expert help



Question 7 (PC 1.4)

How are gas contaminants measured?

Answer may include but is not limited to:

Measuring gasses

When we **gas test** an area, we test how much of a gas is in the area. The measurement we use for some gasses is different to other gasses. We measure some gasses in:

- Percentage of volume (%V)
- Parts per million (PPM)

You can also measure gasses in:

- Milligrams per cubic meter (mg/m³)

Percent of volume (%V) means what percentage of the air we have tested is made up of that gas. For example, for us to breathe we need between 19.5% and 23.5% oxygen — 1% means 1 part in every 100 parts.



Question 8 (PC 1.4)

You are preparing for gas testing. How do you identify hazards from possible atmosphere contaminants?

Answer may include but is not limited to:

- Understand the job and environment
- Review safety data
- Identify potential contaminants
- Monitor for oxygen levels
- Use gas detection instruments
- Learn the threshold limits
- Follow workplace safety procedures
- Establish safe work zones
- Conduct continuous monitoring



Question 9 (PC 1.4)

What are the four dangers a gas monitor tests for?

Answer may include but is not limited to:

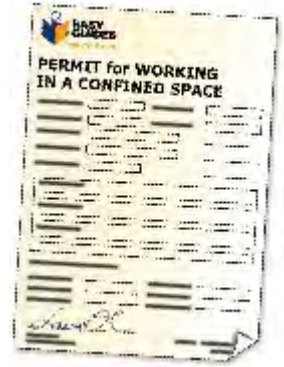


Question 10 (PC 1.5)

You are preparing for gas testing. How can you implement hazard control measures and use appropriate personal protective equipment (PPE)?

Answer may include but is not limited to:

- Identify and assess hazards
- Develop a written plan
- Select the right equipment
- Establish safe work practices
- Ventilation
- Personal Protective Equipment (PPE)
- Emergency response
- Continuous monitoring
- Record keeping

**Question 11 (PC 1.5)**

How does a standard operating procedure (SOP) help you to control hazards and do the job safely?

Answer may include but is not limited to:

- Always doing things the same way
- Spotting dangers
- Staying safe
- Getting ready for emergencies
- Teaching people
- Making someone responsible
- Improving over time




Question 12 (PC 1.5)
What does the following sentence mean, "exposure standards (time-weighted average, short-term exposure limits, peak limitation values, and examination of toxic effect at the level of a range of flammable gases)?"

Answer may include but is not limited to:

The sentence is discussing safety standards for exposure to flammable gases. These standards include:

- Time-weighted average limits
- Short-term exposure limits
- Peak limitation values
- Examining toxic effects for various flammable gases



Question 13 (PC 1.5)
What are explosive limits? When might a gas be in danger of exploding?

Answer may include but is not limited to:

Explosive limits

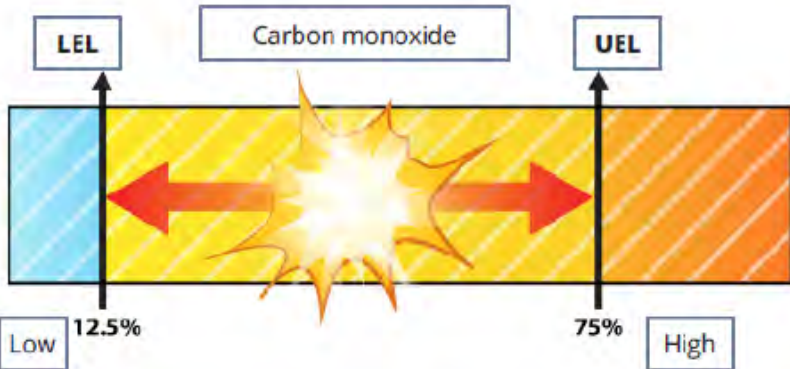
Some gasses can **explode** if they meet an ignition source (flame or spark).

For a gas to explode it needs to be at the right levels.

If the level of gas is too **low**, or too **high**, the gas will **not explode** even if there is an ignition source.

For example, carbon monoxide can explode if it makes up 12.5% of air in an environment.

If there is less than 12.5% it will **not** burn.



WARNING

Lower explosive limit (LEL)

Lower explosive limit (LEL) means the level of a gas is rising to a point that it could **explode**.

If your gas monitor sounds an LEL alarm, you **must** be very careful.

Do not do anything that could cause a spark. For example, using a power tool. If you do, the gas could explode.

Get out of the space as quickly as possible.

WARNING

Upper explosive limit (UEL)

Upper explosive limit (UEL) means the **highest level** of a gas that could **explode**.

Your gas monitor will **not** show the UEL.

If a gas level is at the UEL, you should be **already out of the space**.

2. Test gas 👤

Question 14 (PC 2.1)

You are using gas testing equipment. What permit might you need?

Answer may include but is not limited to:

- Confined space entry permit
- Hazardous work permit
- Environmental monitoring permit
- Construction or demolition permit
- Research or laboratory permits
- Occupational safety permits



Question 15 (PC 2.1)

How do you use gas testing equipment to test gas as required?

Answer may include but is not limited to:

- Select the appropriate gas detection equipment
- Calibration and pre-check
- Set baseline readings
- Properly wear personal protective equipment (PPE)
- Sampling strategy
- Interpret and monitor readings
- Continuous monitoring
- Record data
- Post-testing procedures
- Emergency response plan
- Regular maintenance and calibration



Question 18 (PC 2.4)**What action do you need to take if readings are unacceptable?**

Answer may include but is not limited to:

Following is a general guideline for what to do if gas readings are unacceptable:

- Evacuation
- Isolation
- Notify authorities
- Ventilation
- Personal Protective Equipment (PPE)
- Prevent ignition sources
- Control sources of gas
- Gas detection and monitoring
- Safety checks
- Investigation

**Question 19 (PC 2.5)****You are working in an area and find there is an unacceptable gas reading. How would you communicate needed actions to be taken to appropriate people?**

Answer may include but is not limited to:

- Immediate response
- Alert workmates
- Emergency services
- Gas utility company
- Supervisor or manager
- Use communication devices
- Implement safety procedures
- Maintain communication
- Post-emergency procedures



Question 22 (PC 3.2)**How do inspect and fault-find gas monitoring equipment according to procedures?**

Answer may include but is not limited to:

Inspecting Gas Monitoring Equipment

- Safety precautions
- Visual inspection
- Calibration records
- Sensor checks

Fault-Finding Gas Monitoring Equipment

- Refer to manufacturer's manual
- Check for error codes or alarms
- Perform functional tests
- Inspect gas supply and connections
- Check power supply
- Clean sensors and components
- Check calibration gas
- Software and firmware updates
- Contact technical support
- Documentation

**Question 23 (PC 3.3)****How would you return gas testing equipment in required condition?**

Answer may include but is not limited to:

- Sensor maintenance (if applicable)
- Power down
- Battery management
- Data removal
- Inspection
- Documentation
- Calibration
- Case or packaging
- Return to designated location
- Labelling



Practical Training



The trainer must be satisfied the candidate has successfully demonstrated each element and performance criteria contained in the Unit of Competency.

It is the trainer's responsibility to decide if the candidate has competently demonstrated a skill.



Practical training instructions



Practical training should be performed in a normal working environment where possible. However, under some circumstances may occur in a simulated work environment (refer to training conditions for further information).

The Trainer must:

- Clearly explain to the candidate what is expected of them
- Check that the candidate has been provided with the necessary tools and equipment
- Complete checklists as the candidate goes through the tasks
- Only question a candidate during a practical task if it is safe to do so
- Stop the training immediately if the candidate is doing something dangerous
- Stop the training immediately if the machine or objects are likely to be damaged
- Inform the candidate of the result of the training.

If a trainer needs to stop the training because of danger or possible damage, the candidate must be marked as not yet competent. If the training is stopped, further training would need to take place before a re-training can be undertaken.

Tasks in the training do not have to be done in isolation, they may be done as one continual task.


Practical training tasks.



Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and must include the ability to:

- recognise and assess conditions that require testing
- identify the appropriate action according to procedures and within scope of responsibility, including:
 - selecting, preparing and using gas testing equipment
 - applying testing regime
 - selecting and using personal protective equipment (PPE)
 - identifying hazards and applying control measures
 - cleaning and maintaining equipment
- take readings and interpret, report/record relevant data
- apply known solutions to routine problems
- communicate clearly and unambiguously with a range of personnel on safety conditions and procedures.

Practical Training Task 1 – Prepare for gas testing

<p>Scenario</p> <p>You are about to enter a confined space. You need to check that it is safe. You might need to wear personal protective equipment.</p> <p>Use the checklist below to make sure you are ready.</p>	
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- Find out type of gas/atmosphere to be tested

- Select and calibrate equipment in accordance with procedures

- Find out gas testing regime/sampling pattern required

- Identify hazards from possible atmosphere contaminants
 Implement hazard control measures and use of appropriate personal protective equipment (PPE)

The applicants' performance in the Practical Training was deemed to be:

<input type="checkbox"/> Satisfactory	<input type="checkbox"/> Not yet satisfactory
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Applicant signature:

Date:

Trainer/trainer signature:

Date:

Practical Training Task 2 – Test gas

Scenario

You are about to enter a confined space. You have checked the atmosphere for gas and found that it is currently safe to enter. However, there is the possibility that gas levels might rise so you need to monitor the gas on an ongoing basis.

Use the checklist below to make sure you are keep safe.



- Use gas testing equipment to test gas as required
- Interpret and report readings
- Monitor gas on an ongoing basis as required
- Take required action if readings are unacceptable
- Communicate required actions to be taken to appropriate personnel

The applicants' performance in the Practical Training was deemed to be:

Satisfactory

Not yet satisfactory


Applicant signature:

Date:

Trainer/trainer signature:

Date:

Practical Training Task 3 – Maintain gas

<p>Scenario</p> <p>You have finished the job. You need to clean and maintain the gas testing equipment ready for next time.</p> <p>Use the checklist below to make sure your equipment is properly maintained.</p>	
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- Clean and maintain gas testing equipment in accordance with procedures
- Inspect and fault-find monitoring equipment in accordance with procedures
- Return gas testing equipment to required location and in required condition
- Maintain records of tests and results in accordance with procedures

The applicants' performance in the Practical Training was deemed to be:

<input type="checkbox"/> Satisfactory	<input type="checkbox"/> Not yet satisfactory
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Applicant signature:

Date:

Trainer/trainer signature:	Date:
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