AFOEM Annual Training Meeting 2026
Worksite Visit Program

BOC GAS – PRESTON FACILITY

Pre-Visit Scenario | Registrar Copy

Site	BOC Gas – Preston Fill Plant and Distribution Centre, Melbourne
Section focus	Cylinder fill bays; cylinder testing area; bulk liquid oxygen storage; safety audit
Required PPE	Steel-cap safety footwear; high-visibility vest; safety glasses; long-sleeved clothing; hearing protection (plugs available at BOC gas)

Background

BOC Limited is a member of the Linde Group, one of the world's largest industrial gas companies. The Preston facility is a gas fill plant and distribution centre supplying compressed and liquefied gases across Victoria. Gases handled include oxygen, nitrogen, argon, acetylene, hydrogen, and various specialty gas mixtures. Products are stored in bulk tanks, filled into high-pressure cylinders, and distributed by road.

The site operates 24 hours per day, five days per week. The workforce includes fill plant operators, cylinder testers and inspectors, drivers, warehouse staff, and maintenance personnel. The facility operates under the Work Health and Safety Act 2011 (Cth) and the Dangerous Goods (Storage and Handling) Regulations 2012 (Vic).

You have been invited by BOC's National Safety Manager to participate in a scheduled internal safety audit of the Preston facility, providing specialist occupational health input on hazard identification, health surveillance, and exposure monitoring. Following the site walk, you are asked to present your findings to the site Safety Committee.

What You Observe on the Site Walk

During your walkthrough of the Preston facility, you note the following:

- In the cylinder filling bays, workers are engaged in high-pressure gas transfer operations involving nitrogen, argon, acetylene, and hydrogen. The bays are partially enclosed. Ventilation appears passive.
- In the cylinder testing area, workers are conducting hydraulic pressure testing and visual inspection. Noise levels are clearly elevated. Hearing protection is available but inconsistently worn.
- At the bulk liquid oxygen (LOX) storage area, clear signage identifies an oxygen-enriched atmosphere risk zone. A maintenance worker is observed performing a task in this area without a portable gas detector.
- When you ask the Safety Manager about air monitoring data for the fill bays, he advises that no formal monitoring program is currently in place and is unsure whether one is legally required.
- On reviewing the site's health surveillance records, you note that one worker – a long-serving acetylene cylinder filler – has a recent full blood examination result that you find abnormal. The site medic is unsure of the clinical significance.

Investigations

The following result is available from the health surveillance records. It is provided without interpretation.

Full blood examination – acetylene cylinder filler, male, age 54, 22 years in role:

Parameter	Result	Reference Range
Haemoglobin	108 g/L	130–175 g/L
WBC (total)	2.8 × 10⁹/L	4.0–11.0 × 10⁹/L
Neutrophils	1.3 × 10⁹/L	1.8–7.5 × 10⁹/L
Platelets	148 × 10⁹/L	150–400 × 10⁹/L
MCV	91 fL	80–100 fL
Reticulocytes	0.4%	0.5–1.5%

Discussion Questions

Q1 You are about to walk through the BOC Preston facility as part of a safety audit. Based on what you already know about this type of site – what are the occupational hazards you would expect to find, who is at risk, and by what mechanisms?

Notes:

Q2 You are shown the full blood examination result of the long-serving acetylene cylinder filler. What is the occupational significance of these findings? What is your differential diagnosis, and what investigations would you initiate?

Notes:

Q3 The Safety Manager tells you there is no air monitoring program at the site. What are the employer's legal obligations regarding air monitoring for hazardous chemicals, and how would you advise him?

Notes:

Q4 You observe a worker in the liquid oxygen storage zone without a gas detector, and inconsistent hearing protection use in the cylinder testing area. Using the hierarchy of controls, what would you recommend to address each of these findings?

Notes:

Q5 At the end of the day, you are asked to present your findings to the Safety Committee. How do you structure your occupational health recommendations, and how do you communicate the finding about the individual worker without breaching his confidentiality?

Notes:

Prepare Before the Visit

- Hazards of industrial gas operations – asphyxiant gases, oxygen-enriched atmospheres, flammable gases, acetylene chemistry
- Benzene as a trace contaminant in acetylene – haematotoxicity, IARC classification, biological monitoring
- Interpreting a full blood examination in the context of occupational exposure
- Legal obligations for air monitoring under the WHS Act 2011 (Cth) and Victorian OHS Regulations
- Health monitoring obligations for workers exposed to benzene – Schedule 14, WHS Regulations 2011
- Hierarchy of controls applied to gas hazards and noise in an industrial setting
- Dual obligations of the occupational physician engaged by an employer – confidentiality, duty of care, audit reporting
- How to structure an occupational health report for a non-clinical audience