AFOEM Annual Training Meeting 2026
Worksite Visit Program

PACCAR AUSTRALIA

Pre-Visit Scenario | Registrar Copy

Site	PACCAR Australia – Heavy Vehicle Manufacturing Plant, Bayswater VIC
Section focus	Paint Operations Division – spray booths, mixing room, adjacent workspaces
Required PPE	Steel-cap safety footwear; high-visibility vest; safety glasses; long-sleeved clothing; hearing protection

Background

PACCAR Australia manufactures heavy commercial vehicles at its Bayswater plant, employing approximately 320 workers. The site produces truck chassis, wheel assemblies, and industrial vehicle components across fabrication, welding, paint, and assembly operations.

The paint operations division uses two-pack polyurethane (2K PU) coating systems. The hardener component – PPG F361 Normal Hardener – contains hexamethylene diisocyanate (HDI) oligomers, n-butyl acetate, and glycol ether solvents. Paint is applied using compressed-air spray guns in enclosed spray booths.

Clinical Scenario

THE PATIENT	
Name	Daniel Reeves
Age / Sex	42 years / Male
Occupation	Spray Painter – Paint Operations Division
Duration in role	11 years
Referred by	PACCAR Occupational Health Nurse

Daniel is a spray painter who has worked at PACCAR for 11 years. His duties include paint mixing, spray application of 2K polyurethane coatings to wheel rims and chassis components, spray gun cleaning with solvent, and periodic sanding of cured painted surfaces.

Over the past six months he has developed wheeze, chest tightness, and dry cough during shifts, with eye irritation, a forearm rash, and headaches late in the day. Symptoms consistently improve over weekends and during leave, returning within one to two shifts of resuming spray painting.

Past history: mild childhood asthma (no treatment since age 12); seasonal allergic rhinitis; ex-smoker (10 pack-years, ceased 8 years ago).

Investigations

Results are provided without interpretation.

Air monitoring – HDI (hexamethylene diisocyanate). Complete the 'Your assessment' column

Worker / Task	HDI Concentration	Exposure Standard	Your assessment
Reeves – spraying	0.031 mg/m³ (TWA)	0.020 mg/m³	
Reeves – spray pass (peak)	0.110 mg/m³ (short-term)	0.070 mg/m³ (STEL)	
Chen – paint mixing	0.018 mg/m³ (TWA)	0.020 mg/m³	
Warren – adjacent inspector	0.009 mg/m³ (TWA)	0.020 mg/m³	

Spirometry – Daniel Reeves:

Parameter	Result	Predicted	% Predicted
FEV_1	2.68 L	3.62 L	74%
FVC	4.10 L	4.70 L	87%
FEV_1/FVC	65%	78%	–
Post-bronchodilator FEV_1 change	+16%		–

Serial peak flow monitoring (3-week diary, work and rest days):

Period	Pattern observed
Work days – spray shifts	Progressive decline shift start → end; mean 18% reduction from morning baseline
Rest days (weekends)	Returns toward morning baseline by Day 2 off work
Administrative / non-spray days	Minimal decline compared with spray days

Respirator fit-test records:

Worker	Respirator	Last Fit Test	Outcome
Reeves	Airline (hood)	3 years ago	Pass – expired
Chen	Half-face OV/P2	Never	Non-compliant
Yusuf	Airline (hood)	8 months ago	Fail – facial hair
Cole	Airline (hood)	12 months ago	Pass – spectacles noted

Discussion Questions

Q1 You are about to enter the PACCAR paint operations area – the mixing room, spray booths, and adjacent work areas. What are the occupational hazards present, who is at risk, and by what exposure routes?

Notes:

Q2 Interpret Daniel's spirometry and serial peak flow results. What is the most likely diagnosis, and what is the differential? How does the work-relationship pattern inform your assessment?

Notes:

Q3 Review the air monitoring results and the fit-test records. What do they tell you about the adequacy of exposure control and respiratory protection at this site? What specific failures have you identified?

Notes:

Q4 Using the hierarchy of controls, outline what changes you would recommend to management to reduce isocyanate exposure at this site. What immediate, short-term, and longer-term actions would you prioritise?

Notes:

Q5 Daniel has a forearm rash following a paint spill three months ago. What is the occupational significance of skin exposure to isocyanates – and what should the decontamination procedure have been?

Notes:

Q6 Management asks whether Daniel can return to spray painting. What is your recommendation, and on what evidence is it based? What duties are appropriate in the interim?

Notes:

Prepare Before the Visit

- Mechanism of isocyanate sensitisation – why sensitisation changes the clinical picture permanently
- Diagnostic approach to occupational asthma – serial peak flow interpretation, spirometry, role of specific inhalation challenge
- Australian exposure standards for HDI (TWA and STEL) and how to interpret exceedance
- Assigned protection factor (APF) – what it means and which respirators are appropriate for isocyanate spray operations
- AS/NZS 1715 fit-testing requirements – when required, how often, what constitutes a failure
- Spray booth design – downdraft vs cross-draft; what makes a booth adequate
- Dermal exposure to isocyanates – contribution to respiratory sensitisation; correct decontamination procedure
- Health surveillance obligations for isocyanate-exposed workers in Victoria