



**Australian Government**

# **PUAFIR316 Identify, detect and monitor hazardous materials at an incident**

**Release 1**

## **PUAFIR316 Identify, detect and monitor hazardous materials at an incident**

### **Modification History**

<b>Release</b>	<b>TP Version</b>	<b>Comments</b>
2	PUA12 V2	Unit Title revised Application of the Unit added Method of assessment added
1	PUA00 V8.1	Primary release on TGA

### **Unit Descriptor**

This unit covers the competency required to use specific equipment to detect airborne contaminants, liquids and solids.

This unit replaces PUAFIR307B Monitor hazardous atmospheres.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### **Application of the Unit**

This unit applies to personnel required to detect and identify contaminants at a hazardous materials incident using specialist equipment to identify the materials, assess the risk posed by the material identified and formulate a plan for their safe isolation and removal.

### **Licensing/Regulatory Information**

Not applicable.

## Pre-Requisites

PUAFIR215 Prevent injury

## Employability Skills Information

This unit contains employability skills

## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

## Elements and Performance Criteria

### ELEMENT

### PERFORMANCE CRITERIA

#### 1. Assess hazardous materials incident

1.1 Hazardous materials incident is approached using care and caution and a safe distance is maintained, in accordance with organisational ***procedures*** and/or advice from appropriate authorities

1.2 Hazardous materials are ***identified*** from a safe distance and information is conveyed to the supervisor in accordance with organisational guidelines

1.3 ***Information sources*** are accessed to determine the ***potential behaviour of hazardous materials***, in accordance with organisational guidelines

#### 2. Identify and assess hazards at incident

2.1 Site ***hazards*** are identified in accordance with organisational guidelines.

2.2 Specific hazards relating to the material/s and container/s are identified in accordance with organisational guidelines.

2.3 Relevant hazard information is incorporated into the detection strategy.

2.4 Hazards are assessed according to organisational guidelines and information is conveyed to supervisor.

- 3. Develop an entry plan**
- 3.1 Entry objectives are identified and conveyed to supervisor.
  - 3.2 **Entry plan** is developed in accordance with supervisor directives and organisational policies.
  - 3.3 Appropriate **detection equipment** is assessed and selected in accordance with organisational policies.
  - 3.4 Personal protective equipment is considered in accordance with organisational policies and **response situation**.
  - 3.5 **Hazard control zones** are established in accordance with organisational policies.
  - 3.6 **Decontamination methods** are identified in accordance with organisational policies.
  - 3.7 **Organisations required to assist** with the operation are determined and documented.
  - 3.8 Detection strategy is documented in accordance with organisational policies.
- 4. Implement entry plan**
- 4.1 Entry plan is implemented in accordance with organisational policies.
  - 4.2 Detection equipment is prepared for use in accordance with organisational policies.
  - 4.3 Detection equipment is used and maintained in accordance with organisational policies.
  - 4.4 Results are recorded and reported in accordance with organisational policies.
  - 4.5 Upon leaving the area of operations, decontamination procedures are undertaken when required, in accordance with organisational procedures.
- 5. Review entry plan**
- 5.1 Entry plan is reviewed and safety of entry team is monitored in accordance with organisational guidelines.
  - 5.2 Contamination incidents are recorded and reported to appropriate personnel in accordance with organisational guidelines.
  - 5.3 Entry is reviewed in accordance with organisational guidelines.

## Required Skills and Knowledge

This describes the essential skills and knowledge and their level, required for this unit.

### Required Skills

- analyse and communicate detection results
- don, operate in, decontaminate and remove personal protective clothing and equipment
- interpret safety and hazard information
- use detection equipment

### Required Knowledge

- asphyxiants, which may include simple and chemical, flammable gases and liquids, corrosive gases and liquids
- conditions under which atmospheres become hazardous
- dynamics of toxicity, corrosivity, flammability
- flammable range, upper and lower flammable limits
- legislation relevant to the organisation
- odour threshold, exposure standards (time weighted average, short term exposure limits, peak limitation values), immediately dangerous to life and health (IDLH), and may include acute exposure guideline levels (AEGL)
- organisational policies and procedures
- physical chemistry concepts
- roles and responsibilities of agencies involved
- toxic effects on humans exposed to commonly encountered atmospheric contaminants such as reaction products or combustion products or variable oxygen concentrations
- units of measurement used to express concentration of atmospheric contaminants (mg/cubic m, ppm, %, v/v)

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

Assessment must confirm the ability to:

- implement appropriate organisational standard operating guidelines
- comply with relevant legislation
- demonstrate safe working practices
- interpret hazardous conditions using detection equipment
- recommend appropriate action
- maintain monitoring equipment.

### **Consistency in performance**

Competency should be demonstrated over a range of situations using different types of detection equipment.

### **Context of and specific resources for assessment**

#### **Context of assessment**

Competency should be assessed in environments with detectable but safe levels of contaminants.

#### **Specific resources for assessment**

Access is required to:

- workplace and/or simulations based on possible incidents
- range of personal protective clothing and equipment
- range of detection equipment

### **Method of assessment**

In a public safety environment assessment is usually conducted via direct observation in a training environment or in the workplace via subject matter supervision and/or mentoring, which is typically recorded in a competency workbook.

Assessment is completed using appropriately qualified assessors who select the most appropriate method of assessment.

Assessment may occur in an operational environment or in an agency-approved simulated work environment.

Forms of assessment that are typically used include:

- direct observation
- interviewing the candidate
- journals and workplace documentation

- third party reports from supervisors
- written or oral questions
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## Range Statement

<p>The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. <b><i>Bold italicised</i></b> wording in the Performance Criteria is detailed below.</p>	
<b><i>Procedures</i></b> must include:	<ul style="list-style-type: none"> <li>• government organisational procedures</li> <li>• organisational procedures including maintenance</li> <li>• work health and safety practices and procedures</li> </ul>
and may also include:	<ul style="list-style-type: none"> <li>• Australian Standards and manufacturer's guidelines</li> <li>• confined space procedures such as permit entry plan and entry testing procedures</li> <li>• dynamic risk assessment and planning procedures</li> </ul>
<b><i>Identification of hazardous materials</i></b> must include:	<ul style="list-style-type: none"> <li>• HAZMAT information</li> <li>• initial information</li> <li>• placarding</li> <li>• product/trade names</li> <li>• site manager</li> <li>• visual signs and material indicators</li> </ul>
<b><i>Information sources</i></b> must include:	<ul style="list-style-type: none"> <li>• chemdata</li> <li>• material safety data sheets (MSDSs) or safety data sheets (SDSs)</li> <li>• technical specialist</li> </ul>
and may also include:	<ul style="list-style-type: none"> <li>• electronic databases</li> <li>• environment</li> <li>• reference texts</li> </ul>
<b><i>Potential behaviour of hazardous materials</i></b> must include:	<ul style="list-style-type: none"> <li>• corrosivity</li> <li>• entry routes of toxins</li> <li>• flammability</li> <li>• toxicity</li> <li>• vapour density</li> <li>• vapour pressure</li> </ul>
<b><i>Hazards</i></b> must include:	<ul style="list-style-type: none"> <li>• chemical, biological, radiological,</li> <li>• physical, electrical, mechanical, thermal, visual, environment and dangerous situations</li> <li>• pressure vessels and lines</li> </ul>
<b><i>Entry plan</i></b> may include:	<ul style="list-style-type: none"> <li>• action levels</li> <li>• decontamination</li> <li>• detection strategy</li> <li>• personal protective equipment</li> <li>• safe approach entry and exit</li> </ul>
<b><i>Detection equipment</i></b> must	<ul style="list-style-type: none"> <li>• carbon monoxide detector</li> </ul>



include:	<ul style="list-style-type: none"> <li>• flammable gas detector</li> <li>• hydrogen sulphide detector</li> <li>• indicator paper</li> <li>• oxygen detector</li> </ul>
and may also include:	<ul style="list-style-type: none"> <li>• air sampling apparatus</li> <li>• biological agent detectors</li> <li>• chemical agent monitors</li> <li>• colourimetric detection tubes</li> <li>• field sampling kit</li> <li>• flame ionisation detectors and flame photometric detectors</li> <li>• fourier transform infrared (ftir) spectrometers</li> <li>• hazard categorisation (hazcat) kits</li> <li>• ionisation mobility spectrometers</li> <li>• photoionisation detectors</li> <li>• radiation detectors</li> <li>• radiation dosimeters</li> <li>• radioisotope identifiers and neutron detectors</li> <li>• Raman spectrometers</li> <li>• remote air sampling equipment</li> <li>• sampling tubes</li> <li>• specific electrochemical detectors such as formaldehyde, chlorine</li> </ul>
<b>Response situations</b> may include:	<ul style="list-style-type: none"> <li>• confined spaces</li> <li>• ducts</li> <li>• hazardous waste sites</li> <li>• motor vehicle accidents</li> <li>• pits and shafts</li> <li>• Post fire situations</li> <li>• ships</li> <li>• simulated hazardous environments</li> <li>• storage tanks and silos</li> <li>• transport vehicles</li> <li>• unknown substance incidents</li> <li>• unsound or unsafe structures</li> </ul>
<b>Hazard control zones</b> must include:	<ul style="list-style-type: none"> <li>• area of likely contamination (hot zone)</li> <li>• area of operations (warm zone)</li> <li>• support zone (cold zone)</li> <li>• criteria applied to determine the extent of hazardous areas</li> <li>• controlled exits, entrances, refuges and emergency exits</li> </ul>

<b><i>Decontamination methods</i></b> must include:	<ul style="list-style-type: none"><li>• decontamination plan and corridors</li><li>• types of decontamination as per organisational procedures</li></ul>
<b><i>Organisations required to assist</i></b> may include:	<ul style="list-style-type: none"><li>• ambulance</li><li>• commercial organisations</li><li>• emergency services</li><li>• government departments</li><li>• local government</li><li>• police</li></ul>

## **Unit Sector(s)**

Not applicable.