



**Australian Government**

# **PUAFIR306 Identify, detect and monitor hazardous materials at an incident**

**Release: 1**

# **PUAFIR306 Identify, detect and monitor hazardous materials at an incident**

## **Modification History**

**Release 1.** This is the first release of this unit of competency in the PUA Public Safety Training Package.

## **Application**

This unit of competency involves the skills and knowledge required to use specific equipment to detect airborne contaminants, liquids and solids at a hazardous materials incident.

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

Hazardous materials incident is a generic term used to refer to an incident involving any hazardous material based on physico-chemical, chemical, biological or radiological properties that poses an unreasonable risk to life, property or the environment. This includes dangerous goods, goods too dangerous to be transported and hazardous chemicals.

The fire sector is those sections of government departments, statutory authorities or organisations that have responsibility under jurisdictional arrangements for the delivery of firefighting and fire management services.

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

## **Pre-requisite Unit**

It is essential that the prerequisite units listed below are obtained prior to the issuance of this unit to individuals within the fire sector or the units contributing to the attainment of a fire qualification.

PUAFIR207 Operate breathing apparatus open circuit

## **Competency Field**

Fire

## **Unit Sector**

Fire

## Elements and Performance Criteria

### ELEMENTS

Elements describe the essential outcomes.

#### **1 Assess hazardous materials incident**

### PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Hazardous materials incident is approached using care and caution and a safe distance is maintained, in accordance with organisational procedures and advice from appropriate authorities
- 1.2** Hazardous materials are identified from a safe distance and information is conveyed through the chain of command, in accordance with organisational procedures
- 1.3** Information sources are accessed to determine potential behaviour of hazardous materials, in accordance with organisational procedures

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

- 2.1** Site hazards are identified, in accordance with organisational procedures
- 2.2** Specific hazards relating to materials and containers are identified, in accordance with organisational procedures
- 2.3** Relevant hazard information is incorporated into detection strategy
- 2.4** Hazards are assessed, in accordance with organisational procedures, and information is conveyed through the chain of command

#### **3 Develop an entry plan**

- 3.1** Entry plan objectives are identified and conveyed through the chain of command
- 3.2** Entry plan is developed, in accordance with organisational procedures
- 3.3** Appropriate detection equipment is assessed and selected, in accordance with organisational procedures
- 3.4** Personal protective clothing and equipment is identified, selected and checked, in accordance with organisational policies, procedures and response situation
- 3.5** Hazard control zones are established, in accordance with organisational procedures
- 3.6** Decontamination procedures are identified

- |                               |            |                                                                                                                                                  |
|-------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
|                               | <b>3.7</b> | Organisations required to assist with the operation are determined and documented                                                                |
|                               | <b>3.8</b> | Detection strategy is documented, in accordance with organisational procedures                                                                   |
| <b>4 Implement entry plan</b> | <b>4.1</b> | Entry plan is implemented in accordance with organisational procedures                                                                           |
|                               | <b>4.2</b> | Detection equipment is prepared for use, in accordance with organisational procedures                                                            |
|                               | <b>4.3</b> | Detection equipment is used and maintained, in accordance with organisational procedures                                                         |
|                               | <b>4.4</b> | Personal protective clothing and personal protective equipment is donned and operated, in accordance with organisational policies and procedures |
|                               | <b>4.5</b> | Results are recorded and reported, in accordance with organisational procedures                                                                  |
|                               | <b>4.6</b> | Upon leaving area of operations, decontamination procedures are undertaken, in accordance with organisational procedures                         |
| <b>5 Review entry plan</b>    | <b>5.1</b> | Entry plan is reviewed and safety of entry team is monitored, in accordance with organisational procedures                                       |
|                               | <b>5.2</b> | Contamination incidents are recorded and reported to appropriate personnel, in accordance with organisational procedures                         |
|                               | <b>5.3</b> | Entry plan is reviewed and documentation is completed, in accordance with organisational procedures                                              |

## Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

## Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

identification of hazardous materials must include

- HAZMAT (hazardous materials) information
- initial information
- placarding
- product or trade names
- site manager
- visual signs and material indicators
- CHEMDATA
- Safety Data Sheets (SDS)
- technical specialist

information sources must include

and must include one of the following

- electronic databases
- environment
- reference texts

entry plan must include

- action levels
- decontamination
- detection strategy
- personal protective clothing and equipment
- safe approach entry and exit

detection equipment must include

- carbon monoxide and hydrogen sulphide detectors
- flammable gas detector
- oxygen detector

and must include three or more of the following

- air sampling apparatus
- biological agent detectors
- chemical agent monitors
- colourimetric detection tubes
- field sampling kit
- flame ionisation detectors and flame photometric detectors
- Fourier Transform Infrared (FTIR) spectrometers
- Hazard Categorisation (HAZCAT) kits
- indicator paper
- ionisation mobility spectrometers
- photoionisation detectors
- radiation detectors and dosimeters
- radioisotope identifiers and neutron detectors
- Raman spectrometers

- remote air sampling equipment
  - sampling tubes
  - specific electrochemical detectors such as formaldehyde, chlorine, mass spectrometers and explosive detection kits and/or detectors
- personal protective clothing must include
- chemical protective clothing including splash suits
  - gas tight suits
  - turnout uniform and gloves
- personal protective equipment must include
- breathing apparatus
  - control boards
  - Distress Signal Units (DSU)
- response situations must include three or more of the following
- confined spaces
  - hazardous materials storage sites
  - hazardous waste sites
  - motor vehicle accidents
  - post fire situations
  - ships
  - storage tanks and silos
  - transport vehicles
  - unknown substance incidents

## Unit Mapping Information

This unit replaces and is equivalent to PUAFIR316 Identify, detect and monitor hazardous materials at an incident.

## Links

PUA Training Package Companion Volume Implementation Guide is found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=3eca5672-6d5a-410b-8942-810d0ba05bbf>

# Assessment Requirements for PUAFIR306 Identify, detect and monitor hazardous materials at an incident

## Modification History

**Release 1.** This is the first release of this unit of competency in the PUA Public Safety Training Package.

## Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least one occasion and includes

- analysing and communicating detection results
- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) organisational requirements
- assessing hazardous materials at an incident
- collecting and interpreting safety and hazard information
- complying with legislation
- demonstrating safe working practices
- developing, implementing and reviewing an entry plan
- donning and operating in, decontaminating and removing in personal protective clothing and equipment
- establishing control zones
- identifying and assessing hazards at an incident including implementing hazardous control zones
- identifying hazardous materials
- identifying, selecting, checking, testing and maintaining personal protective clothing and equipment for a range of hazardous materials
- implementing decontamination procedures
- implementing organisational procedures and operating guidelines
- interpreting hazardous conditions using detection equipment
- maintaining monitoring equipment
- operating breathing apparatus
- recommending appropriate actions when identifying, detecting and monitoring materials
- recording and interpreting data
- reviewing entry plan
- selecting, operating and interpreting detection equipment

## Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the

requirements of the elements, performance criteria and range of conditions and includes knowledge of

- apparatus (breathing) maintenance and procedures
- asphyxiates including simple, chemical, flammable gases and liquids
- basic chemistry concepts
- conditions under which atmospheres become hazardous
  - decontamination procedures and types of decontamination including
    - decontamination areas including holding, wash, disrobing and rest
    - decontamination plan and corridor
    - decontamination techniques including emergency, emergency mass and technical decontamination
  - detection strategies applied for decontamination
- dynamic risk assessments
- dynamics of toxicity, corrosivity and flammability
- effects on humans exposed to commonly encountered atmospheric contaminants such as reaction products, combustion products and variable oxygen concentrations
- entry plans
- flammable range
- identification of hazardous materials
- information sources
- legislation relevant to organisation
- local and systemic effects of industrial toxins
- main routes for entry of toxins into the human body
- odour threshold including exposure standards including time weighted average, short term exposure limits and peak limitation values and Immediate Danger to Life and Health (IDLH) which may include Acute Exposure Guideline Levels (AEGL)
- organisational documentation, policies and procedures including those of government
- personal protective clothing and equipment use and limitations for a range of hazardous materials
- physical and chemical properties
- potential behaviour of hazardous materials including corrosivity, entry routes of toxins, flammability, toxicity, vapour density and pressure
- procedures for establishment, maintenance and review of control zones including entry plans and decontamination
- response situations
  - roles and responsibilities of other agencies
- support organisations required to assist
- types of hazards including chemical, biological and radiological, physical, electrical, mechanical, thermal, visual, environment and dangerous situations and pressure vessels and lines
- types of hazard control zones including
  - area of likely contamination (hot zone)

- area of operations (warm zone)
- controlled exits, entrances, refuges and emergency exits
- criteria applied to determine the extent of hazardous areas
- support zone (cold zone)
- units of measurement used to express concentration of atmospheric contaminants (mg/cubic m, ppm, % and v/v)
- upper and lower flammable limits
- use and limitations of workplace exposure standards
- Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) organisational requirements including risk mitigation

## Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

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Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in industry approved simulated workplace operational situations that reflect workplace conditions.

Competency should be demonstrated over a range of situations in environments with detectable but safe levels of contaminants using different types of detection equipment.

Resources for assessment must include access to

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, equipment, tools and personal protective clothing and equipment currently used in industry including
  - a range of detection equipment
- applicable documentation including organisational procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

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