



Australian Government

PUAFIR606 Apply principles of combustion and fire dynamics to fire scene investigation

Release: 1

PUAFIR606 Apply principles of combustion and fire dynamics to fire scene investigation

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 apply the principles of fire science and fire dynamics to a fire scene investigation. It includes applying principles of fire chemistry, chemistry of combustion and fire behaviour.

The unit is applicable to the work of a specialist fire investigator.

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

Not applicable.

Competency Field

Fire

Unit Sector

Fire

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Apply principles of fire chemistry in fire

PERFORMANCE CRITERIA

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

1.1 States of matter, changes and impact on combustion are explained in relationship to fire scene investigation

behaviour		when reporting on fire behaviour
	1.2	Chemical reactions, basic chemical structures, bonds and energy are defined in relationship to fire scene investigation when reporting on fire behaviour
	1.3	Process of chemical reaction and oxidation is explained in relationship to fire scene investigation when reporting on fire behaviour
	1.4	Organic and inorganic compounds are distinguished in relationship to fire scene investigation when reporting on fire behaviour
	1.5	Hydrocarbons and how they are constructed are explained in relationship to fire scene investigation when reporting on fire behaviour
	1.6	Pyrolysis is defined in relationship to fire scene investigation when reporting on fire behaviour
	1.7	Chemistry of combustion in solids, liquids and gases is explained in relationship to fire scene investigation when reporting on fire behaviour
	1.8	Vapour density and its impact on fire spread is assessed in relationship to fire scene investigation when reporting on fire behaviour
	1.9	Different fuel types are identified, and fuel loads are assessed in relationship to fire scene investigation when reporting on fire behaviour
	1.10	Difference between exothermic and endothermic reactions is explained in relationship to fire scene investigation when reporting on fire behaviour
2 Apply knowledge of fire physics and impact on fire behaviour	2.1	Evidence of presence of heat is identified and explained by applying theory of heat release and methods of heat transfer
	2.2	Stages of fire development in structures are identified and outlined in relationship to fire scene investigation when reporting on fire behaviour
	2.3	Stages of fire development in a compartment are identified and detailed in relationship to fire scene investigation when reporting on fire behaviour

- 2.4 Concepts of flashover and backdraught, and their signs and symptoms are outlined in relationship to fire scene investigation when reporting on fire behaviour
- 2.5 Effect of fuel load on fire behaviour is explained in relationship to fire scene investigation when reporting on fire behaviour
- 2.6 Deflagration and detonation are outlined in relationship to fire scene investigation when reporting on fire behaviour
- 2.7 Types of ignition are outlined in relationship to fire scene investigation when reporting on fire behaviour

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.

Unit Mapping Information

This unit replaces and is equivalent to PUAFIR606A Apply principles of combustion and fire dynamics to fire scene investigation.

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>