



**Learner Assessment Guide**  
**Unit Standard 16943**  
**Identify principles of fire development in structures and**  
**compartments and smoke impact on people**  
**(Level 3, Credit 5, Version 2)**

**Level Descriptor**

<b>Level</b>	<b>Process</b>	<b>Employing</b>	<b>Responsibility</b>
<b>3</b>	<b>Carrying out processes that:</b> <ul style="list-style-type: none"><li>• Require a range of well developed skills</li><li>• Offer a significant choice of procedures</li><li>• Are employed within a range of familiar contexts</li></ul>	<b>Employing:</b> <ul style="list-style-type: none"><li>• Some relevant theoretical knowledge</li><li>• Interpretation of available information</li><li>• Discretion and judgement</li><li>• A range of known responses to familiar problems</li></ul>	<b>Applied:</b> <ul style="list-style-type: none"><li>• In directed activity with some autonomy</li><li>• Under general supervision and quality checking</li><li>• With significant responsibility for the quantity and quality of output</li><li>• With possible responsibility for the output of others</li></ul>

**Descriptors:**

Credit 5 - will require approximately 50 - 60 hours of learning, practice or experience and assessment for a person with no previous knowledge or experience.

Version 2 - This document has been prepared based on version 2 of the Unit Standard.

**Elements:**

1. Demonstrate knowledge of the conditions leading to flashover.
2. Demonstrate knowledge of the conditions leading to backdraught.
3. Demonstrate knowledge of the effects of the harmful constituents of smoke on people.

**Prerequisites:**

Unit 4647, *Explain principles of fire science, or demonstrate equivalent knowledge and skills.*

**Assessment Conditions:**

Real or simulated conditions

**Resources:**

Assessor Assessment Guide

**Special Notes:**

None.

## **Assessment Brief Instructions:**

### **Assessing Element 1: Demonstrate knowledge of the conditions leading to flashover.**

The phenomenon of flashover in fire-involved compartments is identified as a component of fire development.

The conditions leading to flashover are identified. This must include:

- room temperature
- ventilation
- fire loading

The signs of imminent flashover are identified. This must include:

- radiated heat
- flame conditions
- smoke conditions
- fire intensity

### **Assessing Element 2: Demonstrate knowledge of the conditions leading to backdraught.**

The phenomenon of backdraught in fire-involved compartments is identified as a component of fire development.

The conditions that could result in backdraught occurring are identified. This must include:

- room temperature
- ventilation
- fire loading
- duration of fire involvement

The imminent signs of backdraught are identified. This must include but is not limited to:

- external compartment cladding temperature
- flame conditions
- smoke conditions
- air-flow conditions around the openings to the fire compartment
- fire intensity

### **Assessing Element 3: Demonstrate knowledge of the effects of the harmful constituents of smoke on people.** This must include:

- particulates
- narcotics
- irritants
- heat

The effects of carbon monoxide on the human body are related to the sustainability of life. This must include:

- properties of carbon monoxide
- signs and symptoms of people affected by carbon monoxide.

The effects that irritants in smoke have on the human respiratory system are related to the signs and symptoms of asphyxia, and burns.

The effects that particulates have on a person's vision and movement are related to a person's ability to orientate themselves to the surroundings, and their perception of time, space and distance.

The effects of excess heat on the human body are linked to changes in the human body's metabolic function.