



Australian Government

Department of Education, Employment and Workplace Relations

PRMPFES43A Prevent ozone depleting substance and synthetic greenhouse gas emissions

Release: 1

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Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies fire protection industry work outcomes required to interpret and explain agreements, protocols, legislation, regulations, codes of practice and handling licences developed to control ozone layer depletion and global warming. The unit also covers assessing the impact of ozone layer depletion and global warming on fire protection industry work practices and proposing changes to work practices in the fire protection industry to tackle the threat of ozone layer depletion and global warming.

Application of the Unit

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This unit of competency supports the six extinguishing agent handling licences prescribed under the *Ozone Protection and Synthetic Greenhouse Gas Management Act 1989*. In particular, as a prerequisite unit, it provides introductory information to all other required units in each licence category.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

Employability Skills Information

Not Applicable

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 Interpret and comply with legal and industry requirements relating to ozone depleting substance (ODS) and synthetic greenhouse gas (SGG) extinguishing agents used in fire protection.	1.1 Apply knowledge and understanding of agreements, protocols, legislative and regulatory requirements, fire protection industry codes of practice, and Australian standards to contribute to prevention of ODS and SGG emissions in the fire protection industry. 1.2 Identify potential and actual breaches of legal and industry requirements and take action according to organisational requirements, ODS and SGG policies and procedures, and best practice requirements.
2 Identify ODS and SGG extinguishing agent handling licence, trading authorisation and usage permit requirements.	2.1 Identify types of ODS and SGG extinguishing agent handling licences and describe entitlement of licensees. 2.2 Identify and describe the licence requirements of each licence category. 2.3 Describe trading authorisations and ODS and SGG usage permits.
3 Apply an understanding of ozone layer depletion and global warming.	3.1 Identify and explain role and function of the ozone layer. 3.2 Identify and describe factors involved with and effect of global warming. 3.3 Describe and classify ODS and SGG extinguishing agents used in the fire protection industry. 3.4 Describe effect of ozone depletion and global warming on human health, the environment and fire protection industry work practices. 3.5 Identify and assess relevant fire protection industry work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- apply an understanding of ozone layer depletion and global warming to change fire protection industry work practices
- use technology to access information

- identify and act upon learning opportunities
- seek appropriate advice and constructive feedback
- apply language, literacy and numeracy skills to:
 - communicate with others in a clear and concise manner in verbal, non-verbal and written modes
 - read, understand and comply with work instructions and specifications
 - read, understand and record information.

Required knowledge:

- role of ozone layer
- effect of ODS and SGG emissions on ozone depletion and global warming
- factors involved in global warming
- ODS and SGG substances used in the fire protection industry
- effect of ozone depletion and global warming on environment and human health
- key features of legislation, regulations and standards applicable to ozone protection in the fire protection industry
- key features of the fire protection industry codes of practice
- ODS and SGG extinguishing agent handling licence features and requirements, authorisations and permit requirements
- implications of **not** applying ODS and SGG legislative requirements to the workplace
- action to take where a breach of ODS and SGG policies and procedures occurs
- relevant federal, state or territory legislation that affects organisational operations, including:
 - anti-discrimination and diversity
 - equal employment opportunity
 - industrial relations.

KEY COMPETENCIES

The seven key competencies represent generic skills considered necessary for effective participation by an individual in the workplace.

Performance level 1 - at this level the candidate is required to undertake tasks effectively.

Performance level 2 - at this level the candidate is required to manage tasks.

Performance level 3 - at this level the candidate is required to use concepts for evaluating and reshaping tasks.

Key competency	Example of application	Performance level
How are ideas and information communicated?	Gather information from a number of sources, including regulatory and organisational sources.	1
How can information be collected, analysed and organised?	Discuss and confirm ODS and SGG extinguishing agent handling requirements in the workplace.	2
How are activities planned and organised?	Discuss ODS and SGG extinguishing agent handling activities to meet	1

Key competency	Example of application	Performance level
	organisational requirements.	

Key competency	Example of application	Performance level
How is teamwork used?	Apply consultative and collaborative approaches through support and assistance provided to work groups.	1
How are mathematical ideas and techniques used?	Use mathematical techniques to establish ODS and SGG extinguishing agent handling requirements.	1
How are problem-solving skills applied?	Identify ambiguous information received from information sources and potential problems related to ODS and SGG extinguishing agent handling activities.	2
How is the use of technology applied?	Use technology to access relevant information about ODS and SGG extinguishing agents.	1

Evidence Guide

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.

Overview of assessment

- This unit could be assessed on its own or in combination with other units of competency relevant to the job function.
- Competency in this unit underpins competency in other aspects of the candidate's role in managing their work tasks.

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

- A person who demonstrates competency in this unit must be able to provide evidence of:
 - locating, interpreting and explaining:
 - ODS and SGG legal requirements for handling extinguishing agents in the fire protection industry
 - extinguishing agent handling licence types, associated responsibilities, usage permits and trading authorisations
 - agreements, protocols, regulatory requirements, fire protection industry code of practice, and Australian standards

relevant to extinguishing agent handling licences

- applying an understanding of ozone layer depletion and global warming to:
- discussing the effect of ODS and SGG emissions on the ozone layer and global warming
- describing the impact of ozone depletion and global warming on human health and the environment
- assessing impact on fire protection industry work practices
- proposing changes to fire protection industry work practices to meet ODS and SGG legal requirements
- taking action to respond to potential and actual breaches of ODS and SGG regulations.

Specific resources for assessment

- The following resources should be available:
 - assessment documentation
 - all necessary legislation and regulatory documents, manuals, textbooks and other relevant documentation
 - training and assessment record books.
- Where applicable, physical resources should include equipment modified for people with disabilities.
- Access must be provided to appropriate learning and/or assessment support when required.
- Assessment processes and techniques must be culturally appropriate, and appropriate to the oracy, language and literacy capacity of the candidate and the work being performed.

Context of assessment

- For valid and reliable assessment of this unit, competency should be demonstrated over a period of time and be observed by the assessor (or assessment team working together to conduct the assessment).
- Competency is to be demonstrated in a range of situations, reflecting the practical requirements of the workplace which may include customer and workplace interruptions and involvement in related activities normally experienced in the workplace.
- Assessment of competency over the full range of performance criteria should be made.
- Candidates should be given the opportunity to practise and undertake self-assessment of performance before requesting formal assessment.
- Oral questioning or a written assessment may be used to assess underpinning knowledge. (In assessment situations where the candidate is offered a preference between oral questioning and written assessment, questions are to be identical.)
- Assessment of evidence should establish the candidate's ability to perform the job to the standard required in the workplace.
- Supplementary evidence may be obtained from relevant authenticated correspondence or reports from supervisors or team leaders. Other forms of evidence may include audit reports,

customer survey reports and appraisal reports.

- Candidate should be encouraged to compile a portfolio of examples of completed documentation relevant to candidate's organisation. One accurate example of each completed document is suggested as sufficient to infer competency and ability to transfer appropriate skills to each document type when required in the workplace. (Oral questioning may contribute as evidence of this ability.)
- Information derived from enterprise policies and practices must be treated as commercial-in confidence.
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge.
- Questioning will be undertaken in such a manner as is appropriate to the oracy, language and literacy levels of the candidate and any cultural issues that may affect responses to the questions. It will reflect requirements of the unit of competency and the work being performed.
- Where assessment is for the purpose of recognition (RCC or RPL), the evidence provided will need to be authenticated and show that it represents current competency demonstrated over a period of time.
- Performance and assessment of this unit must be carried out within the relevant requirements of the following legislative and industry framework:
 - Acts, regulations and codes
 - Australian and international standards identified as relevant
 - environmental regulations
 - organisational requirements, including policies and procedures relating to ODS, SGG and OHS.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Legislative and regulatory requirements may include:

- relevant agreements and protocols
- relevant federal, state and territory Acts, regulations and codes
- ODS and SGG legislation, codes and regulations, including penalties and policing
- relevant current Australian standards, such as AS 1851
- fire protection industry codes of practice
- manufacturer system manuals
- dangerous goods regulations
- licensing arrangements, such as extinguishing agent handling licence
- environmental regulations
- other relevant legislation relating to fire protection equipment, including international, shipping and marine codes
- Australian petroleum industry requirements.

Potential and actual breaches could be identified by:

- direct observation
- workplace quality assurance teams.

Organisational requirements may be located in quality assurance and/or procedures manuals and relate to:

- legal and organisational policies and guidelines
- personnel practices and guidelines outlining work roles, responsibilities and delegations
- legislation relevant to ODS and SGG extinguishing agent handling licences
- ODS and SGG policies, procedures and programs
- documentation and information systems and processes
- use of electronic job scheduling and communication devices.

Extinguishing agent handling licence types include:

- portable fire extinguisher maintenance
- fixed system installation and decommissioning
- fixed system maintenance
- recovery, reclamation and recycling
- warehouse maintenance
- control systems installation.

Entitlement of licensees include:

- **portable fire extinguisher maintenance:**
 - to maintain a portable fire extinguisher, including to repair, pressure test and recharge

an extinguisher

- **fixed system installation and decommissioning:**
 - to install a fixed firefighting system, including to:
 - install pipes and discharge nozzles and actuation mechanisms
 - charge a system after installation
 - install a system that has been charged and sealed by another person
 - to decommission a system, including to:
 - remove charge of extinguishing agent
 - dismantle the system
- **fixed system maintenance:**
 - to maintain a fixed firefighting system, including to:
 - pressure test pipework and test actuation systems
 - certify that system contains an adequate charge
- **recovery, reclamation and recycling:**
 - in the field or in a workshop, to recover an extinguishing agent from a portable fire extinguisher or firefighting system

- **warehouse maintenance:**
 - to monitor stocks of extinguishing agents in a warehouse and, as needed, to transfer an agent from a leaking storage vessel
 - **control systems installation:**
 - to install a fire control system, including any remote operation panel and actuation system.
- Trading authorisations** may include:
- holders of existing state or territory authorisations may apply for an extinguishing agent handling licence:
 - Australian Capital Territory - authorisations granted under the *Environment Protection Act 1997*
 - New South Wales - authorisations issued under clause 17 of the *Ozone Protection Regulation 1997*
 - Northern Territory - registration in the register of Qualified Persons under sub-regulation 22 (3) of the *Ozone Protection Regulations*
 - South Australia - environmental authorisation issued under section 40 of the *Environment Protection Act 1993*
 - Tasmania - individual authorisation issued under subsection 83 (1) of the *Environment Management and Pollution Control Act 1994*
 - Victoria - ozone accreditation issued under clause 16 (1) of the *Industrial Waste Management Policy (Protection of the Ozone Layer)*
 - Western Australia - accreditation issued under approval given under clause 42 (1) of the *Environment Protection (Ozone Protection) Policy Approval Order 2000*.
- Usage permits** may include:
- halon special permits:
 - granted as a written permit
 - which entitle a person to possess halon for use in personal protective equipment.
- Ozone layer:**
- ozone (O₃): a form of oxygen in which the oxygen molecule contains three atoms of oxygen instead of the usual two
 - the atmosphere contains less than 0.4 parts per million of ozone
 - about 90% of the ozone is in the upper part of the atmosphere (the stratosphere)

- most ozone is in the layer from 20 to 25 km above the earth's surface.

Global warming involves:

- carbon dioxide found in small quantities (about 350 parts per million) in the atmosphere
- carbon dioxide trapping infra-red (heat) radiation and warming the atmosphere - the greenhouse effect.

ODS and SGG materials are listed using the format: Product name (other names); use. Check the latest amendments to the Ozone Protection and Synthetic Greenhouse Gas Management Act for the current list of ODS and SGG extinguishing agents which may include:

- **Blitz III** (HCFC Blend D); used in flooding systems
- **CFC 11** (trichlorofluoromethane, CCl_3F); may be found as a propellant in some powder fire extinguishers (this product is banned in Australia)
- **FC-2-1-8** (CEA-308, $\text{CF}_3\text{CF}_2\text{CF}_3$); used in flooding systems
- **FC-3-1-10** (CEA-410, C_4F_{10}); used in flooding systems
- **FC-5-1-14** (CEA-614, C_6F_{14}); used as a streaming agent
- **FE-227** (heptafluoropropane, HFC-227ea); used as a total flooding extinguishing agent - is a replacement for Halon 1301
- **FE-25** (pentafluoroethane, HFC-125); used in inerting and explosion suppression applications and retro-fit to existing Halon 1301 systems
- **FE-36** (hexafluoropropane, HFC-236fa); used in portable fire extinguishers - is a replacement for Halon 1211 and Halon 1301
- **FE-13** (trifluoromethane, HFC-23); used as a total flooding agent
- **FE-241** (chlorotetrafluoroethane, HCFC-124); used as a total flooding agent for non-occupied spaces and as a streaming agent
- **FM100®** (HBFC-22B1); used in portable fire extinguishers
- **FM200®** (heptafluoropropane, HFC-227ea); used in chemical storage areas, clean rooms, communications facilities, laboratories, museums, robotics and emergency power facilities
- **Halotron** (HCFC Blend B); used as a total flooding agent and streaming agent
- **Halon 1211** (BCF); used as a streaming agent - requires a special permit in Australia
- **Halon 1301** (BTM); used as a total flooding agent - requires a special permit in Australia
- **Halon 2402 (dibromotetrafluoroethane, $\text{C}_2\text{Br}_2\text{F}_4$)**; limited use in military systems - requires a special permit in Australia
- **HCFC 22 (chlorodifluoromethane, CHClF_2)**; used as a propellant in some powder fire extinguishers (this product is banned in Australia)
- **HFC 134a** (unsymmetric tetrafluoroethane, CH_2FCF_3); used as a propellant in some powder fire extinguishers

- **NAF-S-III** (HCFC Blend A); used as a total flooding agent - is a replacement for Halon 1301
- **NAF-P-III** (HCFC Blend C); used as a streaming agent - is a replacement for Halon 1211
- **NAF-P-IV** (HCFC Blend E); used as a streaming agent
- **SF6** (sulfurhexafluoride, SF₆); used as an inerting agent for sealed high voltage switchgear.

Effect of ozone depletion and global warming on human health and the environment may include:

- constraints on aquatic ecosystems
- constraints on human immune system
- increased risk of cataracts
- increased risk of skin cancer
- inhibited growth of plants
- reduced production of agriculture
- changes to work practices, including those in the fire protection industry
- increased incidence of photochemical smog.

Unit Sector(s)

Sector

Fire Protection Equipment

Competency field

Competency field

Asset Maintenance