



## **Technical Information Sheet**

**TIS No 15 : 2008**

# **MODEL RISK ASSESSMENT FOR THE STORAGE AND USE OF OXYACETYLENE CYLINDERS**

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## MODEL RISK ASSESSMENT FOR THE STORAGE AND USE OF OXYACETYLENE CYLINDERS

### Introduction

Every day thousands of gas cylinders are used in the workplace or transported by road without incident. However, if gas cylinders are involved in a fire and one of these is suspected of being an acetylene cylinder, it can cause serious local disruption due to the emergency services setting up a 200 metre cordon around the incident scene.

Most of the reported incidents would not have happened if users:

- Fully understood the properties of the gases and the associated hazards
- Were properly trained on how to use oxyacetylene equipment
- Followed guidance on the safe handling and storage of gas cylinders

Six separate model risk assessments have been produced in order to assist users with managing the hazards associated with the following activities:

- 1 - Cylinders Storage
- 2 - Oxyacetylene Package storage indoors
- 3 - Oxyacetylene Package Use
- 4 - Oxyacetylene Package Use at Height
- 5 - Oxyacetylene Package in Service Vans
- 6 - Transportation of Cylinders

For instructions on how to use the model risk assessments refer to " What to Do" page.

**Note:** The oxyacetylene package referred to in this document typically consists of oxygen cylinder, acetylene cylinder, gas regulators for both gases, flashback arrestors fitted to both regulator outlets, oxyacetylene hose assembly fitted with check valves / non return valves (NRV) at the gas torch or blowpipe end, gas torch or blowpipe and cylinder trolley.

## How Do You Rate Risk?

Risk is a combination of the likelihood of an incident occurring and the severity of the injury or loss due to the incident. The Likelihood versus Severity Matrix below is a means for rating risk.

### Likelihood / Severity Matrix

		Risk Rating		
		Low	Medium	High
LIKELIHOOD	High	Medium	High	Severe
	Medium	Low	Medium	High
	Low	Insignificant	Low	Medium
		Low	Medium	High
		SEVERITY (LOSS)		

**Likelihood:** Based on the precautions/controls in place to prevent an incident occurring.

<b>High:</b>	Where no precautions are put in place and the employee can only avoid an incident by following verbally communicated procedures - which typically are only short term. No physical barriers or controls in place.
<b>Medium:</b>	Limited physical barriers or controls in place. The employee can only avoid an incident by working carefully, following training, work instructions and safety procedures.
<b>Low:</b>	Physical barriers or engineering controls such as Flashback Arrestors and Non Return Valves in place to minimise the likelihood.

**Severity:** The degree of injury to the employee or third party, or the cost of loss due to property damage.

#### Personal Injury

<b>High:</b>	Death or disabling injury.
<b>Medium:</b>	Serious injuries requiring medical treatment and time off from work.
<b>Low:</b>	Minor injuries.

		Business Size	
		Large	Small
<b>Loss</b>			
<b>High:</b>	Where the cost of the incident would exceed:	£100,000	£20,000
<b>Medium:</b>	Where the cost of the incident is between:	£10,000 & £100,000	£2000 & £20,000
<b>Low:</b>	Where the cost of the incident could reasonably be expected to be less than:	£10,000	£2,000

### How to carry out the assessment

The risk assessment should be carried out by persons who have been trained in the use of oxy / fuel gas equipment and understand the concept of risk assessment.

1	Select the Risk Assessment form for the activity to be risk assessed.
2	Enter details in required fields at the top of the Risk Assessment form.
3	For each <b>Situation / Activity</b> record the existing control measures in place beside each of the applicable recommended control measures.
4	Based on a comparison of the existing control measures in place against the suggested control measures stated carry out risk rating for each situation / activity by entering a rating of <b>Low, Medium or High</b> for both the <b>Severity</b> and the <b>Likelihood</b> .
5	Using the <b>Risk Rating Matrix</b> determine the level of risk and enter the result in the Risk Rating column. <i>Examples:</i> 1. If Likelihood is <b>Low</b> , and Severity is <b>Medium</b> , Risk rating is <b>Low</b> . 2. If Likelihood is <b>High</b> , and Severity is <b>Medium</b> , Risk rating is <b>High</b> .
6	Decide the result for level of control and enter it onto the Risk Assessment form in the appropriate column ( <b>Result</b> ).  There is a link between the <b>Risk Rating</b> and the <b>Result</b> as follows: Risk Rating = <u>Insignificant (IR)</u> , Result is likely to be <u>Adequately Controlled</u> . Risk Rating = <u>Low Risk (LR)</u> , Result is likely to be <u>Adequately Controlled or Minor Residual Risk</u> . Risk Rating = <u>Medium Risk (MR)</u> , Result is likely to be <u>Minor Residual Risk or Not Adequately Controlled</u> . Risk Rating = <u>High Risk (HR) or Severe Risk (SR)</u> , Result is likely to be <u>Not Adequately Controlled</u> .
7	If the result is " <b>Not Adequately Controlled</b> " decide what action is required to reduce the risk to as low as reasonably practicable (ALARP) and record the same in the Remedial Action column.
8	Do not continue with the activity until risk is reduced to as low as reasonably practicable (ALARP).

#### References:

##### **British Compressed Gas Association (BCGA) documents:**

BCGA Guidance Note GN2 - Guidance for the Storage of Gas Cylinders in the Workplace  
 BCGA Guidance Note GN3 - Safe Cylinder Handling and the Application of the Manual Handling Operations Regulations to Gas Cylinders  
 BCGA Code of Practice CP7 - The Safe Use of Oxy-Fuel Gas Equipment (Individual Portable or Mobile Cylinder Supply)  
 BCGA Code of Practice CP31 Safe Storage and Use of Cylinders in Mobile Workshops and Service Vehicles  
 BCGA Leaflet L1 - Carriage of Gas Cylinders by road in Cars  
 BCGA Leaflet L6 - Cylinders in Fires

##### **European Industrial Gases Association (EIGA) documents:**

EIGA IGC Doc 103/03/E Transporting Gas Cylinders or Cryogenic Receptacles in Enclosed Vehicles  
 EIGA campaign documents on Transport of Gas Cylinders and Receptacles in Non-Dedicated Vehicles

##### **Health & Safety Executive (HSE) documents:**

HSE INDG163 - Five Steps to Risk Assessment  
 HSE INDG308 - The safe use of gas cylinders  
 HSE INDG327 - Take care with acetylene  
  
 HSE8 - Take care with oxygen  
  
 HSE L64 - Safety signs and signals  
  
 HS(G)139 - The safe use of compressed gases in welding, flame cutting and allied processes

##### **BSi documents:**

BS EN ISO 2503 Gas welding equipment pressure regulators  
 BS EN 559 Gas welding equipment rubber hoses.



# Model risk assessment for the outdoor storage of oxygen and acetylene gas cylinders

Assessment Date:

Assessed by:

Location:

Reviewed by:

Workplace /Premises Description:

Review Date:

No.	Situation / Activity	Hazard	Persons Affected	Recommended Control Measures	Existing Control Measures	Likelihood L-M-H	Severity L-M-H	Risk Rating	*Result M-A-N	Remedial Action Plan
1	Storage of oxygen & acetylene cylinders in outdoor storage area	Injury to persons or damage to property if cylinders are accessed/handled incorrectly by unauthorised persons.  External fire or heat impacting on cylinders in storage could cause catastrophic failure of the cylinders due to overheating.	Persons or property within the cylinder storage area or in the surrounding area.	1.1	Store cylinders at least 3 metres away from flammable/combustible materials e.g. wood, flammable liquids, paper etc. <b>Refer: BCGA GN2 - ventilation, electrical assessment and design</b>					
				1.2	Cylinders must be stored in the upright position on a firm level surface.					
				1.3	Cylinders should be stored in a secure lockable enclosure that prevents access to unauthorised persons. Enclosure should be designed and constructed from appropriate, robust, materials suitable for the location and possible risks e.g. padlock to prevent theft or access by unauthorised persons such as children. <b>Refer: BCGA GN2</b>					
				1.4	Display warning notices at access points to the cylinder storage area (in accordance with Safety Signs and Signals Regulations 1986 e.g. 'No Smoking and Naked Flames Forbidden' and 'No Access for Unauthorised Persons'. <b>Refer: BCGA GN2 &amp; HSE L64.</b>					
				2.1	Close oxygen and acetylene cylinder valves and if present remove cylinder key.					
2	Storage of oxyacetylene package outdoors.	External fire or heat impacting on the oxyacetylene package could cause catastrophic failure of the cylinders due to overheating.	Persons or equipment working in the vicinity of the oxyacetylene package.	2.2	Vent the torch, hoses and pressure regulator.					
				2.3	Back-off the pressure adjusting screw on regulators.					
				2.4	Roll up gas hoses then store hoses and torch on the appropriate storage point on the package.					
				2.5	Store the Oxyacetylene Package in a secure location away from flammable / combustible materials such as flammable liquids, wood, paper, textiles, packaging or plastics and sources of ignition e.g. naked flames etc.					
				3.1	Close cylinder valves on empty cylinders and return the cylinders to designated storage area.					
3	Empty Cylinder abuse / waste	Cylinder fire due to ignition of residual gas or hydrocarbon contamination	Persons or property in the vicinity of the gas cylinders.	3.2	Cylinders should never be considered to be completely empty as they will always contain residual gas. Hence the safety precautions applied to full cylinders should also be applied to empty cylinders.					
				3.3	Empty cylinders should be stored in a secure area prior to returning to gas supplier. Always return empty cylinders to the gas supplier, or agent, as soon as is reasonably practicable.					
				4.1	Cylinders are heavy and need to be handled with care. If you are moving large cylinders use a suitable trolley or seek help. <b>Refer BCGA GN3</b>					
4	Manual Handling of Gas Cylinders	Manual handling injury or damage to property if cylinders are handled incorrectly.	Persons or equipment in close proximity to the cylinders.	4.2	Do not drop gas cylinders and never try to catch a falling cylinder.					
				4.3	Cylinders should not be left free-standing they should be secured in a suitable cylinder trolley, cylinder support bracket or placed in a cylinder pen.					
5	Maintain an inventory of Gas Cylinders	Injury to Fire and Rescue Service personnel due a lack of knowledge of what gas cylinders are present in zone, the fire zone.	Fire and Rescue Personnel in the fire zone.	Users must always maintain an up to date inventory of gas cylinders stored on site (location and quantity). This information may be requested by the emergency services in the event of an incident. <b>Refer: HSE L64</b>						
<p><b>Key to Result:</b> M = Minor Residual Risk (monitor) A = Adequately Controlled N = Not adequately Controlled (stop work and improve controls)</p>										



# Model risk assessment for the indoor storage of oxyacetylene package

Assessment Date

Assessed by

Location

Reviewed by

Workplace /Premises Description

Review Date

No.	Situation / Activity	Hazard	Persons Affected	Recommended Control Measures	Existing Control Measures	Likelihood L-M-H	Severity L-M-H	Risk Rating	*Result M-A-N	Residual Action Plan
1	Storage of oxyacetylene package indoors.	Injury to persons or damage to property if package is accessed/handled incorrectly by unauthorised persons.	Persons or property in the vicinity of the oxyacetylene package.	1.1 Close oxygen and acetylene cylinder valves and if present remove cylinder key.						
				1.2 Vent the torch, hoses and pressure regulator.						
				1.3 Back-off the pressure adjusting screw on regulators.						
				1.4 Roll up gas hoses then store hoses and torch on the appropriate storage point on the package.						
		1.5 Store the Oxyacetylene Package away from flammable / combustible materials such as packaging or plastics and sources of ignition e.g. naked flames etc. <b>Refer to GN2</b>								
		1.6 Package should be stored in a secure area with access limited to trained and authorised persons. Display warning notices in accordance with Safety Signs and Signals Regulations 1996 e.g. Smoking and Naked Flames Forbidden and No Access for Unauthorised Persons <b>Refer: BCGA GN2 &amp; HSE L64.</b>								
		1.7 Reduce the number of cylinders kept indoors to as low a number as is practicable. Where possible always store cylinders in dedicated outdoor areas and only bring cylinders indoors as needed.								
2	Empty Cylinder abuse / waste	Cylinder fire due to ignition of residual gas or hydrocarbon contamination.	Persons or property in the vicinity of the gas cylinders.	2.1 Close cylinder valves on empty cylinders and return the cylinders to designated storage area.						
				2.2 Cylinders should never be considered to be completely empty as they will always contain residual gas. Hence the safety precautions applied to full cylinders should also be applied to empty cylinders.						
				2.3 Empty cylinders should be stored in a secure area prior to returning to gas supplier. Always return empty cylinders to the gas supplier, or agent, as soon as is reasonably practicable.						
3	Manual Handling of Gas Cylinders	Manual handling injury or damage to property if cylinders are handled incorrectly.	Persons or equipment in close proximity to the cylinders.	3.1 Cylinders are heavy and need to be handled with care. If you are moving large cylinders use a suitable trolley or seek help. <b>Refer BCGA GN3</b>						
				3.2 Do not drop gas cylinders and never try to catch a falling cylinder.						
				3.3 Cylinders should not be left freestanding they should be secured in a suitable cylinder trolley, cylinder support bracket or placed in a cylinder pen.						
4	Maintain an Inventory of Gas Cylinders	Injury to Fire and Rescue Service personnel due a lack of knowledge of what gas cylinders are present in the fire zone.	Fire and Rescue Personnel in the fire zone.	4.1 Users must always maintain an up to date inventory of gas cylinders stored on site (location and quantity). This information may be requested by the emergency services in the event of an incident. <b>Refer: HSE L64</b>						
<p><b>Key to Result:</b> M = Minor Residual Risk (monitor) A = Adequately Controlled N = Not adequately Controlled (stop work and improve controls)</p>										



# Model risk assessment for the use of oxyacetylene packages

Assessment Date

Assessed by

Location

Reviewed by

Workplace /Premises Description

Review Date

No.	Situation / Activity	Hazard	Persons Affected	Recommended Control Measures	Existing Control Measures	Likelihood L-M-H	Severity L-M-H	Risk Rating	*Result M-A-N	Residual Action Plan	
1	Incorrect use of Oxyacetylene Package.	Fire resulting from the incorrect use of Oxyacetylene Package e.g. regulator pressures set wrongly, incorrect torch light up / shutdown procedure used causing a back fire or flashback.	Persons or property in the vicinity of the oxyacetylene package.	1.1	No one should use Oxy/fuel gas equipment unless they have received adequate training in:- Properties of the gases; The safe use of the equipment; Precautions to be taken; The use of fire extinguishers; The means of escape, raising the fire alarm and calling the fire brigade.						
				1.2	Carry out pre-use equipment checks on the oxyacetylene package. <b>Refer: HS(G)739 pp 38 - 44.</b>						
				1.3	Procedures for the safety use of the equipment should be readily available for users.						
				1.4	NEVER use oxygen for dusting down work benches, machinery or clothing.						
				1.5	After undertaking a risk assessment, the correct Personal Protective Equipment (PPE) should be selected to match the process typically the following are needed - welding gloves, leather apron, suitable coverall and foot protection, eye and head protection.						
2	Use of faulty or incorrect gas equipment.	Fire resulting from the use of faulty or incorrect equipment (regulator, flashback arrestors, torch, hoses, etc.)	Persons or property in the vicinity of the oxyacetylene package.	2.1	Only use equipment supplied by a reputable equipment supplier.						
				2.2	Only use equipment that is designed for the intended gas service i.e. oxygen and acetylene compatible <b>Refer BCGA CP7 - routine inspection and maintenance.</b>						
				2.3	Replace defective equipment before attempting to use the Oxyacetylene Package.						
3	Accidental ignition of flammable materials during metal cutting or welding.	If oxyacetylene package is used close to flammable liquids or solids these can be ignited by sparks from the gas cutting or welding activity. The Oxyacetylene package could also be impacted by the resulting fire.	Persons or property in the vicinity of the oxyacetylene package.	3.1	Clear the immediate work area of any flammable materials and or put in place suitable fire screens or blankets to prevent contact between sparks and flammables.						
				3.2	If the oxyacetylene package is to be used in non routine work area then a safe system of work is required, e.g. Permit to Work.						
				4.1	Position gas hoses out of the line of fire from the flame or metal spouter.						
4	Hose damage during metal cutting / welding or hose leaking due to aging.	Fuel gas release could cause a fire if ignited and the fire could impact on the gas cylinders or the gas cylinders are depressurised.	Persons or property in the vicinity of the oxyacetylene package.	4.2	Hoses must be manufactured to BS EN 559 and correctly coloured for the gas service i.e. blue for oxygen and red for acetylene. The hose assembly should be to EN 1256.						
				4.3	Never hang up the welding or cutting torch whilst still alight.						
5	Residual hot spot OR smouldering fire after metal cutting or welding.	Localised fire escalating to a major fire.	Persons or property in the vicinity of the fire.	Carry out work site inspection after completion of hot work to ensure there are no residual hot spots or smouldering fires that could escalate to a large fire.							





## Model risk assessment for the use of oxyacetylene packages at height

Assessed by   
 Reviewed by   
 Review Date

Assessment Date   
 Location   
 Workplace /Premises Description

No.	Situation / Activity	Hazard	Persons Affected	Recommended Control Measures	Existing Control Measures	Likelihood L-M-H	Severity L-M-H	Risk Rating	*Result M-A-N	Residual Action Plan
1	Lifting oxyacetylene package or cylinders for use at height on a construction site.	If cylinders are dropped from height the valve could shear off on impact with the ground and fuel gas released ignited or decomposition is triggered in the acetylene cylinder due to the shock on impact. Injury to persons below.	Persons or property below or in the vicinity of the dropped cylinders.	1.1	Lifting of oxyacetylene package for working at height should be avoided, e.g. by use of extended hoses or temporary piped supply. Where this can not be avoided cylinders should be lifted in a proprietary lifting cage or trolley. Under no circumstances should a cylinder be lifted by its valve or valve guard.					
				1.2	Conditions on the ground below the lift should be taken into consideration before attempting the oxyacetylene package lift e.g. traffic movements or pedestrians.					
				2.1	Clear the immediate work area of any flammable materials and or put in place suitable fire screens or blankets to prevent contact between sparks and flammables.					
2	Use of oxyacetylene package at height.	Oxyacetylene package is used close to flammable liquids or solids which are then ignited by sparks from the gas cutting or welding activity. Oxyacetylene package could also be impacted by the resulting fire.	Persons or property in the vicinity of the oxyacetylene package and on the ground below.	2.2	The oxyacetylene package should only be used at height for the duration of the job, then returned to ground level after use and then stored in a secure safe location.					
				2.3	The extent of the spread of sparks and metal spatter needs to be considered as it may have an impact at lower levels e.g. sparks or spatter falling through a mezzanine platform onto a lower level and igniting a flammable material or harming passers by.					
				2.4	If the oxyacetylene package is to be used in non routine work area then a safe system of work is required.					
3	Hose damage during metal cutting / welding or hose aging.	Fuel gas release is ignited or the gas cylinders are depressurised.	Persons or property in the vicinity of the oxyacetylene package.	3.1	Position gas hoses out of the line of fire from the flame or metal sputter.					
				3.2	Hoses must be manufactured to BS EN 659 and correctly coloured for the gas service i.e. blue for oxygen and red for acetylene. The hose assembly should be to EN 1256.					
				3.3	Never hanging up the torch whilst still alight.					
4	Residual hot spot after metal cutting or welding.	Localised fire escalating to a major fire.	Persons or property in the vicinity of the fire.	4.1	Carry out work site inspection after completion of hot work to ensure there are no residual hot spots or smouldering fires that could escalate to a large fire.					

					5.1 Flash Back Arrestors must be fitted to outlet of both oxygen and acetylene pressure regulators.	
					5.2 Replace disposable Flash Back Arrestors after a flashback or backfire.	
					5.3 FBA's of the resettable type should be reset as per the manufacturers instructions.	
5	The use of Flash Back Arrestors (FBAs).	Fire caused by the use of an oxyacetylene package which has not had flash back arrestors fitted.	Persons or property in the vicinity of the oxyacetylene package.	5.4 Resettable Flash Back Arrestors must be replaced at the manufacturers recommended intervals.	5.4 Resettable Flash Back Arrestors must be replaced at the manufacturers recommended intervals.	
				5.5 The causes for a flashback or backfire must be investigated to identify an damaged or faults to the equipment (particularly the nozzle) before trying to reuse the oxyacetylene package.	5.5 The causes for a flashback or backfire must be investigated to identify an damaged or faults to the equipment (particularly the nozzle) before trying to reuse the oxyacetylene package.	
				5.6 Regular occurrences of flashbacks or backfires should be indications of poor welding practice and the need for retraining.	5.6 Regular occurrences of flashbacks or backfires should be indications of poor welding practice and the need for retraining.	
6	Hose check valves / Non Return Valves (NRV)	Fire affecting the oxyacetylene package and the surrounding area.	Persons or property in the vicinity of the oxyacetylene package.	6.1 Non Return Valves should be fitted on the hose end connecting to the blowpipe or torch.	6.1 Non Return Valves should be fitted on the hose end connecting to the blowpipe or torch.	
				7.1 Use the correct pressures and nozzle size for the job. In particular the acetylene pressure must not exceed 0.622bar (9psi).	7.1 Use the correct pressures and nozzle size for the job. In particular the acetylene pressure must not exceed 0.622bar (9psi).	
				7.2 Regulators should be replaced every 5 years. <b>Refer: BCGA CP7</b>	7.2 Regulators should be replaced every 5 years. <b>Refer: BCGA CP7</b>	
				7.3 Regulators with damaged gauges or connectors must not be used and should be replaced. <b>Refer: BCGA CP7</b>	7.3 Regulators with damaged gauges or connectors must not be used and should be replaced. <b>Refer: BCGA CP7</b>	
7	Pressure Regulators	Fire affecting the oxyacetylene package and the surrounding area.	Persons or property in the vicinity of the oxyacetylene package.	7.4 Never attempt to force a regulator connection onto the cylinder (acetylene is left hand thread and oxygen is right hand thread).	7.4 Never attempt to force a regulator connection onto the cylinder (acetylene is left hand thread and oxygen is right hand thread).	
				7.5 Only equipment designed for oxygen use should be used and any such equipment will be labelled appropriately.	7.5 Only equipment designed for oxygen use should be used and any such equipment will be labelled appropriately.	
				7.6 Use clean hands or gloves when assembling oxygen equipment e.g. attaching a regulator to a new cylinder or attaching the hoses to the blowpipe or torch.	7.6 Use clean hands or gloves when assembling oxygen equipment e.g. attaching a regulator to a new cylinder or attaching the hoses to the blowpipe or torch.	
				7.7 Always back off the regulator adjusting screw when not in use.	7.7 Always back off the regulator adjusting screw when not in use.	
8	Oxygen and Hydrocarbon Reaction	Fire affecting the oxyacetylene package and the surrounding area.	Persons or property in the vicinity of the oxyacetylene package.	8.1 Never attempt to lubricate or use thread sealing tape on a regulator connection.	8.1 Never attempt to lubricate or use thread sealing tape on a regulator connection.	
<b>Key to Result:</b> <b>M</b> = Minor Residual Risk (monitor) <b>A</b> = Adequately Controlled <b>N</b> = Not adequately Controlled (stop work and improve controls)						



# Model risk assessment for the use of oxyacetylene packages in service vans

Assessment Date

Assessed by

Location

Reviewed by

Workplace /Premises Description

Review Date

No.	Situation /Activity	Hazard	Persons Affected	Recommended Control Measures	Existing Control Measures	Likelihood L-M-H	Severity L-M-H	Risk Rating	*Result M-A-N	Residual Action Plan
1	Incorrect use of Oxyacetylene Package.	Fire resulting from the misuse of Oxyacetylene Pack e.g. regulator pressure being wrongly adjusted, or the use of a shut down procedure used causing a back fire or flashback.	Persons or property in the vicinity of the oxyacetylene package.	1.1	No one should use Oxy/fuel gas equipment unless they have received adequate training in- The safe use of the equipment; Precautions to be taken; The use of fire extinguishers; the means of escape; raising the fire alarm and calling the fire brigade.					
				1.2	Pre-use equipment checks. Refer: HS(G)139 pp 38 -44.					
				1.3	Procedures for the safe use of the equipment should be readily available for users.					
				1.4	NEVER use oxygen for dusting down work benches, machinery or clothing.					
				1.5	The correct Personal Protective Equipment (PPE) should be used to match the process typically the following are needed: welding gloves, leather apron, suitable coverall and foot protection, eye and head protection.					
2	Use of faulty or incorrect gas equipment.	Fire resulting from the use of faulty or incorrect equipment (regulator, flashback arrestors, torch, hoses, etc.)	Persons or property in the vicinity of the oxyacetylene package.	2.1	Only use equipment supplied by a reputable equipment supplier.					
				2.2	Only use equipment that is designed for the intended gas service e.g. oxygen and acetylene compatible (refer CP7).					
				2.3	Replace defective equipment before attempting to use the Oxyacetylene Package.					
3	Accidental ignition of flammable materials during metal cutting or welding.	Oxyacetylene package is used close to flammable liquids or solids which are then ignited by sparks from the gas cutting/welding torch. Oxyacetylene packages could also be impacted by the resulting fire.	Persons or property in the vicinity of the oxyacetylene package.	3.1	Clear the immediate work area of any flammable materials and or put in place suitable fire screens or blankets to prevent contact between sparks and flammables.					
				3.2	If the oxyacetylene package is to be used in non routine work area then a safe system of work is required.					
				4.1	Position gas hoses out of the line of fire from the flame or metal spatter.					
				4.2	Hoses must be manufactured to BS EN 559 and correctly coloured for the gas service i.e. blue for oxygen and red for acetylene. The hose assembly should be assembled in accordance with EN 1256.					
4	Hose damage during metal cutting / welding or hose aging.	Fuel gas release is ignited if the gas cylinders are depressurised.	Persons or property in the vicinity of the oxyacetylene package.	4.3	Never hanging up the torch whilst still alight.					
				5.1	Work site inspection after completion of hot work.					
5	Residual hot spot OR smouldering fire after metal cutting or welding.	Localised fire escalating to a major fire.	Persons or property in the vicinity of the fire.	6.1	Cylinders must be properly secured in a suitable receptacle and stored in an upright position.					
				6.2	Oxyacetylene cylinders are classified as Dangerous Goods and therefore covered by the UK Carriage of Dangerous Goods Regulations (EU ADR). If appropriate, vehicle should be adequately equipped and signed as per the regulations and fitted with suitably sized ventilation openings. Note: The CDG regulations DO NOT apply to the carriage of cylinders in private vehicles.					
				6.3	Cylinders / receptacle should be carried in a separate gas light and ventilated compartment.					
				6.4	2 kg fire extinguisher is required on the vehicle.					
				6.5	Cylinder valves must be closed whilst in transit and any equipment disconnected.					
				6.6	Van driver should be trained in: Potential hazards and dangers of acetylene and oxygen gases, safe handling and secure storage of gas cylinders, emergency procedures and the use of fire extinguisher.					
6	Service Vans equipped with a oxyacetylene package.	Moving load due to vehicle collision could seriously injure driver, passengers or members of the public. If cylinders are ejected from the vehicle acetylene decomposition could be initiated.	Van driver, passengers, persons or property in the vicinity of the vehicle.							





# Model risk assessment for the transport of oxyacetylene gas cylinders in vehicles

Assessment Date:

Assessed by:

Location:

Reviewed by:

Workplace /Premises Description:

Review Date:

No.	Situation / Activity	Hazard	Persons Affected	Recommended Control Measures	Existing Control Measures	Likelihood L-M-H	Severity L-M-H	Risk Rating	Result M-A-N	Residual Action Plan				
1	Transportation of Oxyacetylene package in a closed vehicle (service vans not included).	Fire and/or explosion if the vehicle is involved in a fire and oxyacetylene package is engulfed in the flames or heated to 400 deg C.  Moving load due to vehicle collision, could seriously injure driver, passengers or members of the public. Also if cylinders are ejected from the vehicle acetylene decomposition could be initiated.	Vehicle driver, passengers, emergency services or property in the vicinity of the vehicle.	Oxyacetylene cylinders are classified as Dangerous Goods and therefore covered by the UK Carriage of Dangerous Goods Regulations (EU ADR). However, the CDG regulations apply to the transport of cylinders using commercial vehicles and NOT the carriage of cylinders in private vehicles. The transport of any gas cylinder in an enclosed vehicle is dangerous, hence the use of an open vehicle or trailer is highly recommended. If a closed vehicle must be used then the following precautions need to be taken.										
				1.1	Ensure that cylinder valves are closed and not leaking. <b>Never</b> transport a cylinder if a leak has been detected on it.									
				1.2	Avoid transporting gas cylinders in the passenger compartment.									
				1.3	Cylinders must be adequately secured against moving and should be in an upright position during transport. Consider the forces involved in a traffic accident.									
				1.4	The number of cylinders to be transported should be limited to the strict minimum.									
				1.5	Ensure the space occupied by the cylinders is well ventilated and, if a private vehicle is being used, then, it is always good practice to apply some form of signage to inform the emergency services that gas cylinders are being carried on board.									
				1.6	The journey should be kept as short as possible and cylinders should be removed from the vehicle soon after arrival at the destination.									
				1.7	Do not leave cylinders stored in vehicles and if the cylinders must be left in a vehicle for short periods then, ensure vehicle is in secure/safe parking area and locked.									
				1.8	<b>Never</b> transport gas cylinders with regulators or other equipment attached.									
				2.1	Close cylinder valves on empty cylinders and return the cylinders to designated storage area.									
				2.2	Cylinders are never considered to be completely empty and will always contain residual gas.	Persons or property in the vicinity of the gas cylinders.								
				2.3	Empty cylinders should be stored in a secure area prior to returning to gas supplier. Always return empty cylinders to the gas supplier, or agent, as soon as is reasonably practicable.									
				3.1	Cylinders are heavy and need to be handled with care. If you are moving large cylinders use a suitable trolley or seek help. <b>Refer BCGA GN3</b>	Persons or equipment in close proximity to the cylinders.								
				3.2	Do not drop gas cylinders and never try to catch a falling cylinder.									
				3.3	Cylinders should not be left freestanding they should be secured in a suitable cylinder trolley, cylinder support bracket or cylinder pen.									
				4.1	Users should always maintain an up to date inventory of gas cylinders carried on the vehicle. This information may be requested by the emergency services in the event of an incident. <b>Refer: HSE L64</b>	Fire and Rescue Personnel in the fire zone.								
				<b>Key to Results:</b> M = Minor Residual Risk (monitor)    A = Adequately Controlled    N = Not adequately Controlled (stop work and improve controls)										