

# WELDING – SHORT HEALTH AND SAFETY ASSESSMENT TOOL

This audit tool helps you to identify the welding and cutting hazards in your workplace. Once the hazards have been identified you can use the Department of Labour publication Health and Safety in Welding to implement recommended control measures. The Department recommends welders read the publication through before using this tool.

Page references in the section headings also refer to Health and Safety in Welding. This publication and a comprehensive assessment tool for welding can be downloaded from

www.osh.dol.govt.nz/order/catalogue/welding.shtml. For more detail refer to *tn7* at **www.wtia.com.au**.

### SUMMARY (pages 6-8)

1.	Which of these hazards a attention	re present and require
	Eire/explosion	Burns
	🗌 Fumes	Electric shock
	Compressed gases	Hazardous substances
	Toxic gases	Heat stress
	Radiation	Noise
	🗌 Dust	🗌 Inert gases
	(metal preparation)	(suffocation)
	□ Vibration	$\Box$ Manual handling issues
<b>FRA</b>	INING AND CERTIFICAT	TON (pages 9 and 10)
2.	Are welders certified for t they are doing and in the elements of welding healt safety?	basic
PRO	CESS/EQUIPMENT SELE	CTION (page 11)
3.	Describe the sort of weld	ng/cutting being done
	Key words and phrases:	

Welding method

Gases being used

- Electrode type
- Metals involved Coating on metals
  - Duration and location of welding
- ......

### GENERAL HEALTH AND SAFETY (pages 6, 7 and 12)

- **4.** Mark any key words and phrases that indicate the presence of a hazard and write control measures. Key words and phrases:
  - Housekeeping

• General arc flash

- Air circulation Labelling of hazardous
- protection materials • Availability of safety • First aid equipment and data sheets (SDS) training
- Warning signage • Lighting

..... Hazards and control measures ..... .

### FIRE PREVENTION AND HOTWORK (pages 13-15)

**5.** From the key words and phrases, note any hazards that may lead to a fire or explosion, and note any control measures.

Key words and phrases:

- Combustibles, explosives or flammables present?
- Combustibles on the other side of metal walls?
- Fire watchers and inspections
- Combustible floors, ceilings or walls?
- Wetting, shielding or covering combustibles?
- Ventilation ducts and conveyors

- Sprinkler systems
- Work on drums, barrels and tanks
- Oil and grease free

### • Fire extinguishers

- Work in confined spaces

Hazards and control measures

# **PROTECTIVE CLOTHING/EQUIPMENT** (pages 16 and 17)

- 6. Which personal protective equipment should be supplied for this welding operation?
  - U Welding helmet Eye protection
  - Apron
- Spats/leggings
- Cap
- Neck protection

Fire-resistant gauntlet

□ Steel-capped boots □ Hearing protection

gloves

- □ Fire-resistant overalls with long sleeves
- Respiratory protection

### FUME AND GAS CONTROL (pages 18-20 and 45)

- **7.** It is assumed that protection will be needed against general fumes from the welding process. Which other specific fume/gas hazards are present?
  - □ Toxic metal fumes
    - Ozone
  - Phosgene Phosphine
- Nitrogen oxides

□ Fluxing agents

□ Inert gases

- Carbon monoxide
- Highly toxic metals (beryllium, cadmium)

Effects made worse by
confined spaces

Control measures	
	-
	-

### VENTILATION (pages 21-23 and 45)

**8.** Describe where the welding is being carried out and the ventilation that exists there. Write any controls required.

Key words and phrases:

- Number of people exposed, including bystanders
- Ventilation slot on a welding bench
- Relocatable hood
- Size and roof height of the workshop, if indoors
- Discharge of contaminated air
- Gun-mounted ventilation

Description
Controls

### ELECTRICAL SAFETY (pages 24 and 25)

**9.** From the key words and phrases, note any hazards arising from poor selection of welding equipment and suggest controls for these hazards.

Key words and phrases:

- Lowest no load • Earthing clamps and voltage and automatic control
  - checks RCD devices

leads

Shortest possible

cables plus grounding

- Power board safety
- Cable connections (if needed)
- Rod holders

Hazards and control measures

**10.** From the key words and phrases, note any hazards arising from the unsafe use of welding equipment and suggest controls.

Key words and phrases:

- Positioning of welding controls (no knots etc.)
- Power shut-off

Water

- Disconnect after use
  - Electrical sparks

Operation of

equipment within

rated duty cycle

- Removal of electrodes Drying of hands from rod holders

Hazards and control measures

**11.** From the key words and phrases, note any hazards arising from the unsafe inspection and repair of welding equipment and suggest controls.

Key words and phrases:

· Inspection of: leads, cables, switches, cover plates and rod holders.

Hazards and control measures

### SAFE USE OF WELDING GASES (pages 26-27)

**12.** From the key words and phrases, note the presence of any gas-related hazards and suggest controls.

Key words and phrases:

### Maintenance of gas bottles

- Labelling
- Stored in a ventilated area

- Separate storage for fuel and oxygen
- Acetylene cylinders upright
- Heat/electrical separation
- Regular examination for rust, leaks and defects

• Secured against falls

• Free of oil and grease

• Empties marked

### Integrity of equipment connected

- Regular inspection
- Colour coding correct
  Flashback arrestors

### Correct usage of gas equipment

- Correct assembly procedures
- Leak testing procedures
- Correct lighting procedures
- · Flashback signs known and how to respond

### General

- Avoid using LPG in trenches/holes
- Close valves before disassembly
- Avoid sources of ignition
- Don't dust off clothing with oxygen

Hazards and control measures

...... .....

### HAZARDOUS SUBSTANCES (pages 28-31)

**13.** List any hazardous substances not already covered in this checklist and state control measures for each.

### **METAL PREPARATION (page 32)**

**14.** From the key words and phrase, note any hazards present and suggest controls.

Key words and phrases:

- Abrasive blasting
  Degreasing
- Mechanical
  Preparation
  Acids or alkalis

Hazardous substances and control measures

### WELDING IN CONFINED SPACES (pages 33-35)

**15.** From the key words and phrases, note any hazards arising from work in confined spaces and suggest controls for these hazards.

Key words and phrases:

- Observer with access to cut-off switch
  - Removal of gas hoses when idle

• Atmospheric testing

Permit to work

- Safe access and preplanned emergency rescue
  - Reflected arc flash

Ventilation

Training

• Time limitations

Heat stress

Hazards and control measures

### **RADIATION (page 37)**

**16.** From the key words and phrases, note any hazards arising from exposure (actual or potential) to radiation and suggest controls for these hazards.

Key words and phrases:

- Arc flash through the Hand shields side of the eye ineffective
- Bystanders
  All skin covered

Hazardous substances and control measures

### **GENERAL SAFETY ISSUES (pages 38-40)**

**17.** Do welders keep their heads out ☐ Yes ☐ No of the welding plume?

**Noise**: Noise levels can be hazardous during some welding and metal cleaning processes. If you can't hear someone speaking at a distance of one metre, noise levels are likely to be too high. Refer to the Department of Labour publication *Approved Code of Practice for the Management of Noise*.

**Vibration:** Prolonged use of powered hand tools may expose welders to harmful levels of vibration, resulting in decreased blood circulation in the fingers. The effect of vibration is made worse when working in the cold. Vibration can be reduced by good tool selection and design, regular tool maintenance and by the wearing of gloves.

Describe any action required to deal with issues of noise or vibration.



Manual handling: Welders may be required to handle heavy objects, carry out welding in awkward postures for long periods, make repetitive movements or work in awkward positions. Refer to the Department of Labour's Code of Practice for Manual Handling for information on dealing with these issues.

Describe any action required to deal with m handling issues.

### HAND TOOL FITNESS AND SAFETY (page 41)

**18.** From the key words and phrases, note any hazards arising from the use of hand tools and suggest controls for these hazards.

Key words and phrases:

- RCD on electrically- Chipping hazards powered tools arising during deslagging
- electrical safety
- Air-powered tools blowing cold air over hands
- Trigger design and the risk of overuse disorders

• Wet/sweaty hands and • Vibration due to poor maintenance • Ergonomics: hand shape, diameter and weight Repair of insulation Hazards and control measures

with	The following requirements apply to a	ll workp	place
	hazards		
nanual	Have employees been given	🗌 Yes	ΠN
	information about the (welding)		

(pages 42-44)

hazards they face?

SPECIFIC REQUIREMENTS OF THE HEALTH

19. Information, training and supervision

**AND SAFETY IN EMPLOYMENT ACT 1992** 

Have employees been given training Ses No on how to do the (welding) work the right way and on controlling the hazards?

🗌 Yes 🗌 No

🗌 Yes 🗌 No

Are employees supervised until 🗌 Yes 🗌 No they can carry out the work safely?

### 20. Monitoring

If an employer decides that an employee faces a significant hazard and if that hazard cannot be eliminated or isolated, then the exposure to the hazard must be monitored and, with informed consent, the employee's health in relation to that hazard must also be monitored.

Is environmental monitoring 🗌 Yes 🗌 No carried out?

Is personal health monitoring carried out?

### 21. Employee involvement

Are employees involved in health □ Yes □ No and safety matters?

.....

## 22. General comments

****		 •••		• • •	••	• • •		•••	• • •	•••	•••	•••	•••	•••	•••	•••	•••	• • •	•••	•••	•••	•••	•••	•••	••••	•••	••••	•••	••••	•••	•••	•••	• • •	•••	• • •	•••	•••
÷ .																																					
<b>;</b>	• • • •	 •••	• • •	• • •	•••	• • •		••	• • •		•••	• •	••	••	• • •	• • •	••	• • •	• •	•••	•••	• • •	•••	•••	• • •	•••	• • •	••	• • •	•••	• • •	•••	• • •	• • •	• • •	•••	• •
:																																					
:																																					
<u>.</u>		 																																			
:																																					
: · · ·		 •••	• • •	• • •	•••	•••		•••	• • •		•••	•••	•••	•••	• • •		•••	• • •	•••	•••	•••	••••	•••	•••	• • •	•••	• • •	•••		•••	• • •	•••	• • •	• • •	•••	•••	• •
:																																					
÷																																					
÷	••••	 •••	• • •	• • •	•••	• • •	•••	••	• • •	•••	•••	•••	•••	•••	• • •	• • •	••	• • •	• •	• • •	•••	• • •	•••	•••	• • •	•••	• • •	••	• • •	•••	• • •	•••	• • •	•••	•••	• • •	•••
÷																																					
÷																																					
÷		 • • •			• •			• •				• •	• •	• •			• •		• •	• • •			• •			• •	• • •	• •		• •		• •		• • •		• • •	• •
:																																					
÷ .																																					
<u>.</u>		 																																			
÷ .																																					
÷ .																																					
:																																					
:		 •••	•••	•••	•••	•••		•••	•••		•••	•••	•••	•••	•••	•••	••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••	•••
÷ .																																					
÷ .																																					
: · · ·		 •••	• • •	• • •	• •	• • •	•••	•••	• • •	•••	•••	• •	•••	• •	• • •	• • •	•••	• • •	• •	•••	•••	• • •	•••	• • •	• • •	•••	• • •	•••	• • •	•••	• • •	•••	• • •	• • •	• • •	•••	• •
:																																					
÷ .																																					
	••••	 •••	•••	• • •	•••	• • •	•••	••	• • •	•••	• •	•••	•••	•••	• • •	•••	••	•••	• •	• • •	•••	• • •	•••	•••	• • •	•••	• • •	••	• • •	•••	• • •	•••	• • •	•••	•••	• • •	•••
÷ .																																					
÷																																					
÷		 • • •	• • •		• •	• • •		• •			• •	• •	• •	• •		• • •	• •		• •	• • •	• • •		• •	• • •		• •	• • •	• •		• •		• • •		• • •		• • •	• •
:																																					
:																																					
i		 																																			
÷ .																																					
:																																					
ŧ		 																																			
		 			•••			•••			•••	•••	•••	•••			•••		•••	•••	•••		•••			•••	•••	•••		•••				•••		•••	•••
÷ .																																					
÷																																					
:		 •••	• • •	• • •	• •	• • •		•••	• • •		•••	•••	•••	•••	•••		•••	• • •	•••	•••	•••	•••	•••	• • •	• • •	•••	••••	•••	• • •		•••	• • •	• • •	• • •	• • •	•••	• •
:																																					

# Health and safety action plan

Factor	Practicable steps	Likely impact	Plan for actioning the steps	Who will action?	Deadline
		Ŧ			
Training/certification		Σ			/ /
					/ /
		Ŧ			/ /
Process/equipment selection		Σ			/ /
					/ /
		I			/ /
General health and safety		Σ			/ /
					/ /
		Ŧ			/ /
Fire prevention and hot work		Σ			/ /
					/ /
		I			/ /
Protective clothing/ equipment		Σ			/ /
					/ /
		т			/ /
Fume and gas control		Σ			/ /
		_			/ /
		I			/ /
Ventilation		Σ			/ /
		-			

Factor	Practicable steps	Likely impact	Plan for actioning the steps	Who will action?	Deadline
		I			/ /
Electrical safety		Σ			/ /
					/ /
		I			/ /
Safe use of welding gases		Σ			/ /
					/ /
		I			/ /
Hazardous substances		Σ			/ /
					/ /
		I			/ /
Metal preparation		Σ			/ /
					/ /
		I			/ /
Confined spaces		Σ			/ /
					/ /
		I			/ /
Radiation		Σ			/ /
		<b>_</b>			/ /
Ganaral cafatv (nnica		I			/ /
vibration, manual		Σ			/ /
nanumy)		-			/ /

Factor	Practicable steps	Likely impact	Plan for actioning the steps	Who will action?	Deadline
		Ŧ			/ /
Hand tools		Σ			/ /
					/ /
Requirements of the		I			/ /
Health and Safety in		Σ			/ /
Employment Act 1992		_			/ /
		I			/ /
		Σ			/ /
					/ /
		I			/ /
		Σ			/ /
					/ /
		I			/ /
		Σ			/ /
					/ /
		Ξ			/ /
		Σ			/ /
					/ /
		I			/ /
		Σ			/ /
		Г			/ /