



TARONG ENERGY CORPORATION LIMITED

TARONG POWER STATION BUSINESS PROCEDURE FOR

RESPIRATORY HAZARDS AND GUIDELINES FOR RESPIRATORY PROTECTIVE EQUIPMENT

TAR - SAF - 01

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1.0 Purpose

The purpose of this document is to define guidelines for the minimum respiratory protective equipment required to protect against respiratory hazards.

2.0 Scope

These guidelines shall apply during operation and maintenance activities at Tarong Power Station including overhauls and forced outages.

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3.0 Policy

It is the policy at Tarong Power Station to have in place guidelines for the use of respiratory protective equipment for respiratory hazards in the workplace.

These guidelines shall be updated as required when new areas and conditions come to light or new information becomes available on Exposure Standards.

It is the responsibility of all employees and contractors at Tarong to follow these guidelines as appropriate.

These guidelines are detailed in Appendix A.

3.1 Associated Actions

Not Applicable.

4.0 Definitions

RPE refers to Respiratory Protective Equipment.

Minimum Protection refers to the minimum level of RPE which is acceptable in a particular location under particular conditions.

Cr/Ni Welding Fume refers to welding fumes resulting from welding of metals containing nickel or chromium.

Respirable Dust refers to dust that is composed of very fine particles able to reach the lower bronchioles and alveolar regions of the lung. (Ref 5.1).

Inhalable Dust refers to those airborne particles which are taken in through the nose or mouth during breathing.

Tarong Ash refers to residue remaining after the combustion of coal which contains respirable crystalline silica.

Peak refers to the maximum airborne concentration to which workers may be exposed.

STEL refers to Short Term Exposure Limit. STEL's are airborne concentrations averaged over a period of 15 minutes. Workers should not be exposed at the STEL concentration continuously for longer than 15 minutes, or for more than four such periods per working day with 60 minutes between successive exposures at the STEL concentration.

TWA refers to Time Weighted Average which is the exposure standard for an airborne contaminant over an eight hour working day for a five day working week and is the level below which RPE is not mandatory.

ppm refers to Parts Per Million.

cfu refers to Colony Forming Units.

PAPR refers to Powered Air Purifying Respirator.

SMF refers to Synthetic Mineral Fibre.

5.0 Reference Documentation

- 5.1 National Occupational Health and Safety Commission (1995) *Exposure Standards for Atmospheric Contaminants in the Occupational Environment*, 3rd Edition, Australian Government Publishing Service, Canberra.
- 5.2 National Occupational Health and Safety Commission (2004) *National Hazardous Substances Regulatory Package, Amendments to Update Standards - Crystalline Silica*, Australian Government Publishing Service, Canberra.
- 5.3 TE Official File No. 353/36/41: Air Quality Determinations in the Workplace.

6.0 Revision History

Rev. No.	Rev. Date	Revision Description	Author	Approv. By
0 (As TAR-POL-29)	18.05.99	Replacement for Station Standing Instruction S0050.	P Green	G Campbell
1 (As TAR-SAF-01)	21.07.05	Replacement for TAR-POL-29. Update RPE and Exposure Standards.	P Green	W Renshaw

APPENDIX A

TARONG POWER STATION RESPIRATORY HAZARD GUIDELINES

LOCATION	CONDITIONS	HAZARDS	TWA	MINIMUM RPE
Penthouse Internal Access	Uncleaned or Cleaned - Welding - Cutting/grinding - Buffing	Tarong Ash SMF	0.1 mg/m ³ Respirable Crystalline Silica fibres/mL 2 0.5 mg/m ³ Inhalable Dust containing fibres	P2 Filter Half Facepiece
		Cr/Ni Welding Fume	5 mg/m ³ Inspirable Dust 0.5 mg/m ³ Total Cr 0.05 mg/m ³ Cr (VI) 0.1 mg/m ³ Ni 0.1 ppm peak Ozone	A1 P2 Filter Half Facepiece
		Magnaflux Cleaner, Developer and penetrant		Use adequate ventilation or if working in immediate vicinity, use a half face respirator with a combination type 'A' Filter for organic vapours and a P2.
	Cleaning	Tarong Ash SMF	0.1 mg/m ³ Respirable Crystalline Silica fibres/mL 2 0.5 mg/m ³ Inhalable Dust containing fibres	P3 Filter in a PAPR or P3 Filter in full facepiece.
Drum Internal Access	Cleaned or Uncleaned	Magnetite Dust	5 mg/m ³ Inhalable Dust	P2 Filter Half Facepiece

LOCATION	CONDITIONS	HAZARDS	TWA	MINIMUM RPE
Furnace Internal Access	Installing Scaffold Prior to Wash	Tarong Ash	0.1 mg/m ³ Respirable Crystalline Silica	P2 Filter Half Facepiece
	Furnace and Rear Pass Washing.	Tarong Ash <i>Legionella</i>	0.1 mg/m ³ Respirable Crystalline Silica Guideline Value: 100 cfu/mL	P2 Filter Full Facepiece with water shield required for airborne dust. P2 Filter Full Facepiece required for <i>Legionella</i> , if more than 100 cfu/mL.
	Washed and Installing Scaffold	Tarong Ash	0.1 mg/m ³ Respirable Crystalline Silica	Not required.
	General WorkingConditions - Welding/Cutting/ - Grinding	Tarong Ash Welding Fume	0.1 mg/m ³ Respirable Crystalline Silica 5 mg/m ³ Inhalable Dust 0.1 ppm peak Ozone	Mist ash with water prior to grinding for N.D.T. A1 P2 Filter Half Facepiece.
		Cr/Ni Welding Fume	5 mg/m ³ Inhalable Dust 0.5 mg/m ³ Total Cr 0.05 mg/m ³ Cr (VI) 0.1 mg/m ³ Ni 0.1 ppm peak Ozone	A1 P2 Filter Half Facepiece
Wire Buffing In Furnace	Tarong Ash	0.1 mg/m ³ Respirable Crystalline Silica	Mist ash with water prior to wire buffing. P3 Filter in PAPR or P3 Filter in full facepiece.	
Pendent and Superheater Area	General Work - Welding	Tarong Ash	0.1 mg/m ³ Respirable Crystalline Silica	P2 Filter Half Facepiece
	- Cutting/grinding - Shield Replacement	Cr/Ni Welding Fume	5 mg/m ³ Inhalable Dust 0.5 mg/m ³ Total Cr 0.05 mg/m ³ Cr (VI) 0.1 mg/m ³ Ni 0.1 ppm peak Ozone	A1 P2 Filter Half Facepiece

LOCATION	CONDITIONS	HAZARDS	TWA	MINIMUM RPE
Rear Pass Including RH/SH Dampers	General Work - Welding - Cutting/grinding	Tarong Ash Welding Fume	0.1 mg/m ³ Respirable Crystalline Silica 5 mg/m ³ Inhalable Dust 0.1 ppm peak Ozone	A1 P2 Filter Half Facepiece
Air Heaters	Unwashed	Tarong Ash	0.1 mg/m ³ Respirable Crystalline Silica	P2 Filter in Full Facepiece
	During Wash	Tarong Ash <i>Legionella</i>	0.1 mg/m ³ Respirable Crystalline Silica Guideline Value: 100 cfu/mL	P2 Filter Full Facepiece with water shield required for airborne dust. P2 Filter Half Facepiece required for <i>Legionella</i> , if more than 100 cfu/mL.
	Washed - Welding - Cutting/grinding	Tarong Ash Welding Fume	0.1 mg/m ³ Respirable Crystalline Silica 5 mg/m ³ Inhalable Dust 0.1 ppm peak Ozone	P2 Filter Half Facepiece
Windboxes	Cleaning	Tarong Ash	0.1 mg/m ³ Respirable Crystalline Silica	P3 Filter in PAPR
Boiler Air Ducts - Primary Air - Secondary Air - Windboxes - Air Register - Burner Tubes	General Work - Welding - Cutting/grinding	Tarong Ash Welding Fume	0.1 mg/m ³ Respirable Crystalline Silica 5 mg/m ³ Inhalable Dust 0.1 ppm peak Ozone	A1 P2 Filter Half Facepiece
Gas Ducts, Precip. Inlets, Precip. Outlets to Stack	General Work - Welding - Cutting/grinding	Tarong Ash Ceramic Dust Welding Fume	0.1 mg/m ³ Respirable Crystalline Silica 5 mg/m ³ Inhalable Dust 5 mg/m ³ Inhalable Dust 0.1 ppm peak Ozone	A1 P2 Filter Half Facepiece

LOCATION	CONDITIONS	HAZARDS	TWA	MINIMUM RPE
Precipitators	Unwashed or washed General Work -Cutting/grinding - Welding	Tarong Ash Welding Fume	0.1 mg/m ³ Respirable Crystalline Silica 5 mg/m ³ Inhalable Dust 0.1 ppm peak Ozone	A1 P2 Filter Half Facepiece
Precipitator Ash Hoppers	Cleaning	Tarong Ash	0.1 mg/m ³ Respirable Crystalline Silica	P2 Filter in Full Facepiece
	Washed - Welding	Tarong Ash Welding Fume	0.1 mg/m ³ Respirable Crystalline Silica 5 mg/m ³ Inhalable Dust 0.1 ppm peak Ozone	A1 P2 Filter Half Facepiece
Basement During Overhauls	F.D. Fan Test Runs	Tarong Ash	0.1 mg/m ³ Respirable Crystalline Silica	P2 Filter Half Facepiece
Pulverisers and P.F. Pipes	Unwashed General Work - Hanger repairs - Pipe removal - Welding	Coal Dust Welding Fume	0.1 mg/m ³ Respirable Crystalline Silica 3 mg/m ³ Respirable Dust 5 mg/m ³ Inhalable Dust 0.1 ppm peak Ozone	A1 P2 Filter Half Facepiece
	Washed General Work - Disassembly - Fill-in-Ball measurement - Refractory replacement - Welding	Coal Dust Welding Fume	0.1 mg/m ³ Respirable Crystalline Silica 3 mg/m ³ Respirable Dust 5 mg/m ³ Inhalable Dust 0.1 ppm peak Ozone	A1 P2 Filter Half Facepiece for coal dust, refractory replacement and welding.

LOCATION	CONDITIONS	HAZARDS	TWA	MINIMUM RPE
Coal Plant		Coal Dust	0.1 mg/m ³ Respirable Crystalline Silica 3 mg/m ³ Respirable Dust	P2 Filter Half Facepiece if dusty conditions
Condensing and Feedheating Open Areas	General Work - Welding - Cutting/grinding - Lagging Rem/Rep	Cr/Ni Fume	5 mg/m ³ Inhalable Dust 0.5 mg/m ³ Total Cr 0.05 mg/m ³ Cr (VI) 0.1 mg/m ³ Ni 0.1 ppm peak Ozone	A1 P2 Filter Half Facepiece
	- Machining	De-Solv-It	300 ppm	Use adequate ventilation
	- Stress Relieving - Cr/Ni Welding	Tarong Ash Welding Fume SMF	0.1 mg/m ³ Respirable Crystalline Silica 5 mg/m ³ Inhalable Dust 0.1 ppm peak Ozone 0.5 fibres/mL	A1 P2 Filter Half Facepiece
	Abrasive Blasting	Abrasive Dust	10 mg/m ³ Inhalable Dust	Head covering air hose or air line respirator, continuous flow.
Condenser Steam Space	Welding	Cr/Ni Fume	5 mg/m ³ Inhalable Dust 0.5 mg/m ³ Total Cr 0.05 mg/m ³ Cr (VI) 0.1 mg/m ³ Ni 0.1 ppm peak Ozone	A1 P2 Filter Half Facepiece
	Cutting/grinding	Welding Fume	5 mg/m ³ Inhalable Dust 0.1 ppm peak Ozone	
Deaerator	Welding NDT buffing	Wire Iron Oxide Dust Welding Fume	5 mg/m ³ Inhalable Dust 0.1 ppm peak Ozone	A1 P2 Filter Half Facepiece

LOCATION	CONDITIONS	HAZARDS	TWA	MINIMUM RPE
Feedheaters	Welding	Welding Fume	5 mg/m ³ Inhalable Dust 0.1 ppm peak Ozone	A1 P2 Filter Half Facepiece
Condenser Water Side and C.W. Conduits	Inspections Scaffolding C.W. Conduit Repair	Hydrogen Sulphide <i>Legionella</i>	TWA : 10 ppm STEL: 15 ppm Guideline Value: 100 cfu/mL	Use adequate ventilation. See TAR-SAF-10 <i>Legionella</i> Bacteria Hazards. P2 filter Half Facepiece required for <i>Legionella</i> , if more than 100 cfu/mL.
	Tube Repair	Oxygen deficiency/excess	Oxygen > 19.5% < 23.5%	Use adequate ventilation.
Reserve Feedwater Tank	Painting	Paint Vapour	Dependant on paint composition	A1 P2 Half face respirator for paint vapour
Turbine	Lagging Removal and Replacement including Main Valves	SMF	0.5 Fibres/mL 2 mg/m ³ Inhalable Dust	P2 Filter Half Facepiece
Generator	Slot Wedge Inspection	SMF	0.5 Fibres/mL 2 mg/m ³ Inhalable Dust	P2 Filter Half Facepiece
	- Repair End Winding - Inspection	Acetone Vapour	TWA : 500 ppm STEL: 1000 ppm	A2 Filter Half Facepiece for organic vapours
	- Repair	Araldite M Vapour contains triethylenetetramine	10 ppm Triethylamine 10 ppm Ethylenediamine 1 ppm Diethylenetriamine	K2 Filter Half Facepiece for ammonia and amine vapours.

LOCATION	CONDITIONS	HAZARDS	TWA	MINIMUM RPE
Chimney (above 10 metre level).	- Inspection - Repair	Sulphur Dioxide	TWA 2 ppm STEL 5 ppm	E2 P2 Filter Full Facepiece if sulphur dioxide is 1 to 20 ppm. Breathing Apparatus if > 20 ppm.
Chemical Plants	- Inspection - Repair	Ammonia Diisopropylamine Hydrazine	TWA 25 ppm STEL 35 ppm TWA 5 ppm TWA 0.01 ppm	K2 P2 Filter Full Facepiece.
Chlorine Plant	- Inspection - Repair	Chlorine	Peak 1 ppm	Breathing Apparatus.