

Procedure No: CAL-OHS-014
TRIM Ref No: C/D/19/8935
Reviewed: 10/19
Amended: 10/19
Review Due: 10/21



CALLIDE POWER STATION PROCEDURE

MANAGEMENT OF RESPIRABLE DUST

CAL-OHS-014

Responsible Officer: General Management Callide Power Station
Responsible Manager: Callide Business Partner Health and Safety
Responsible Executive: EGM Plant Operations

DOCUMENT HISTORY

Key Changes	Prepared By	Checked By	Approved By	Date
Develop Dust Control Plan to support Coal Improvement Plan	N Seibel H Schmidt			
Dust Control Plan May 2019	A Cashin	T Cuskelly	B Smith	25/10/2019

CONTENTS

DOCUMENT HISTORY	1
1 PURPOSE	4
2 SCOPE	4
3 RESPONSIBILITIES AND ACCOUNTABILITIES	4
3.1 General Manager Site	4
3.2 Head of Health and Safety	4
3.3 Health and Safety Business Partner (BP)	4
3.4 Health and Wellbeing Specialist	4
3.5 Certified Industrial Hygienist	5
3.6 Chief Medical Officer (CMO)	5
4 INTRODUCTION	6
5 CONSULTATION	7
6 IDENTIFICATION OF DUST HAZARDS	7
6.1 Mechanisms for generation of dust	8
6.2 Specific tasks for generation of dust	8
6.3 Assessing the risks from respirable dust exposure	9
6.4 Respirable dust monitoring program	9
6.5 Callide Similar Exposure Groups (SEGs)	10
6.6 Shift arrangements & Dust sampling equipment	11
6.7 Sampling methods	11
7 CONTROLLING RESPIRABLE DUST RISKS	12
7.1 Dust Control Strategy	12
7.2 Elimination/substitution controls	12
7.3 Engineering controls	12
7.4 Isolation, segregation or enclosure	12
7.5 Administrative controls	13
7.6 Personal Protective Equipment	13
8 REVIEWING CONTROL MEASURES	14
8.1 Investigating Exposure Exceedances	14
9 HEALTH MONITORING	15
10 REPORTING AND RECORD KEEPING	15
10.1 Informing the worker	15
10.2 Informing the Health, Safety and Environment Committee	15
10.3 Informing the Regulator	15



Procedure No: CAL-OHS-014
TRIM Ref No: C/D/19/8935
Reviewed: 10/19
Amended: 10/19
Review Due: 10/21

11	DEFINITIONS	17
12	REFERENCES	18
13	RECORDS MANAGEMENT	18

1 PURPOSE

This procedure specifies the requirements for managing identified respirable dust risks at Callide Power Station, in compliance with Work Health and Safety (Qld) legislation and the Code of Practice Management of respirable dust hazards in coal-fired power stations (2018).

2 SCOPE

This procedure applies to all Callide power station workers inclusive of contractors (long & short term).

3 RESPONSIBILITIES AND ACCOUNTABILITIES

3.1 General Manager Site

The General Manager is responsible for ensuring that:

- The dust monitoring program is administered on site.
- The implementation of the Callide Annual Improvement Plan – Respirable Dust Management
- The budget and resources are allocated to manage respirable dust control measures

3.2 Head of Health and Safety

Head of Health and Safety is responsible for ensuring that they:

- Liaise with the site General Managers regarding the health monitoring program
- Provide the annual health monitoring schedule to the Callide Business Partner Health and Safety

3.3 Health and Safety Business Partner (BP)

Health and Safety Business Partners are responsible for ensuring that they:

- Assist with the identification of mechanisms for dust generation and specific tasks for generation of dust on site
- Liaise with the site General Managers regarding dust monitoring results (exceedances)
- Review and report on health monitoring results
- Assist with an incident investigation into dust exposure exceedances.
- Maintain and calibrate site dust monitoring equipment.
- Assist with administering the dust monitoring program on site.
- Provide health statistics and reporting for health and safety committees

3.4 Health and Wellbeing Specialist

The Health and Wellbeing Specialist is responsible for ensuring that they:

- Review the reports of dust monitoring at Callide power station
- Provide advice on dust reports in relation to health surveillance
- Assist and manage pre-employment medicals, health assessments onsite - including respiratory questionnaire, work history, spirometry (lung capacity checks) and case management referral for the chest x-ray process.

- Liaise with the Chief Medical Officer about individual's health (as required).
- Organise fit testing of respirators for identified workers

3.5 Certified Industrial Hygienist

Industrial Hygienists are responsible for ensuring that they:

- Undertake monitoring of dust risks at Callide Power Station at an agreed schedule.
- Recommend the monitoring plan in conjunction with the baseline data
- Report findings of dust monitoring results to CS Energy
- Provide recommendations on findings from site visits
- Provide a database to CS Energy to collate all dust monitoring results

3.6 Chief Medical Officer (CMO)

The Chief Medical Officer is responsible for ensuring that they:

- Review the hygiene monitoring program on at least an annual basis and provide health surveillance advice to CS Energy
- Ensure valid techniques are used to detect the effects on workers from exposure to dust
- Provide supervision of the pre - employment medicals, provide records of medicals to CS Energy, provide individual records to monitored workers.
- Provide supervision and recommendations to the site Health & Wellbeing Specialist for the onsite Health monitoring program

4 INTRODUCTION

Workers at Callide power station engage in a range of work tasks or processes which may involve handling or exposure to respirable dust, including coal dust or coal fly ash. The combustion process, in addition to producing steam for power generation, also produces coal fly ash and bottom dust and ash, collectively known as “coal ash”, as a waste product.

Respirable coal dust and ash (containing variable percentages of respirable crystalline silica) and respirable crystalline silica is primarily the focus of this management plan.

Most dust clouds contain particles of varying sizes and a mixture of components depending on the environment sampled. Hazardous dust (and particles) are not always visible, larger particles are referred to as inhalable and smaller particles as respirable. When it comes to dust, size matters. It's exposure to the ultra-fine dust particles (respirable in size) and invisible to the eye, that can lead to chronic lung diseases.

Inhalable dust particles - Are known generally as particles that are visible to the naked eye and are deposited in the nose, throat and upper respiratory tract. Due to their larger size, hairs and mucous membranes act as a natural protective barrier (collect and trap). Once trapped they are expelled through coughing, sneezing, and through mucous and sputum production. This larger particle size can cause irritation and inflammation around these areas of the upper airways, such as rhinitis, bronchitis, allergens & asthma.

Respirable dust particles - Are so small they are invisible to the naked eye (you will not see these) and are able to reach deep in to the lungs as they easily pass through natural defences. They can cause irritation to the lungs, which the body attempts to heal, causing scar tissue to form (fibrosis), replacing health lung tissue. These are known as coal workers pneumoconiosis, silicosis, chronic obstructive pulmonary disease (COPD) & emphysema.

Asbestos although also classified as a respirable dust, does not apply to this control plan as there is a separate procedure for Asbestos.

Callide Power Station also identifies that there are other (inhalable) dusts likely to be encountered and for which the risks of health effects for exposure must also, be controlled such as;

- Abrasive blasting dusts such as ilmenite and garnet
- Synthetic man-made mineral fibres (e.g. glass wool, rock wool and ceramic fibres)
- Toxic dusts (e.g Lead)
- Welding fumes

There are potential health effects from the exposure of dusts (coal & crystalline silica), fibres and other sources mentioned below;

Health Effects	Dust particle content
Pneumoconiosis (e.g coal workers pneumonocosis or 'Black Lung') & chronic obstructive pulmonary disease (COPD) such as bronchitis and emphysema.	Coal dust , coal fly ash
Lung scarring and fibrosis (e.g silicosis)	Asbestos, quartz (respirable crystalline silica)
Systemic toxic effects caused by absorption into the blood	Lead, Manganese, Cadmium, zinc
Allergic & hypersensitivity reactions	Organic & inorganic chemicals
Cancer	Chromates. Asbestos, quartz (respirable crystalline silica)
Irritation of the mucous membranes of the nose and throat	Acid, alkali, other irritating particles

"Managing respirable dusts hazards in coal-fired power stations Code of practice 2018 (page 6)"

Once respirable dust particles enter the lower lungs, it becomes more difficult for the respiratory system to clear that dust. This means exposure to respirable dust and protecting the respiratory health of workers are an important part of the risk management process at a coal-fired power station.

5 CONSULTATION

Consultation involves sharing of information, giving workers a reasonable opportunity to express views and taking those opinions into account before making decisions on health and safety matters. This will occur with the health and safety committee, trim intranet documents, site notifications and direct contact.

6 IDENTIFICATION OF DUST HAZARDS

A qualitative Hygiene Risk Assessment (HRA) was completed at Callide to identify dust risk areas at the power station. Additional evidence was collected through personal monitoring from 2017 – 2018 to formulate a statistical analysis of baseline exposures. Through this quantitative approach and collection of information, we have been able to definitively identify specific tasks (by means of personal exposure) of which generate the most prevalent dust sources on site.

Recognising potential dust hazard generation is key in managing the risks associated with dust and identifying suitable controls. Several ways that this can be identified at Callide is as follows;

- Conducting a risk assessment of work processes and the work environment
- Conducting a walk-through assessment of the workplace
- Undertaking air monitoring at that work place
- Observing the work and talking to workers about how work is carried out
- Inspecting the plant and equipment that is used as part of electricity generation
- Reviewing incident reports

6.1 Mechanisms for generation of dust

- **Overhaul activities** – Specific sectioned off work areas which are not normally accessed in such a manner. Essentially this is scheduled overhaul tasks in block periods with limited access and large numbers of employees and contractors performing multiple tasks simultaneously on multiple levels. Cleaning and maintenance activities during overhaul where fly ash and coal dust accumulates and collection occurs such as boilers, furnaces, flue gas duct work and burner fronts, fabric filters, electrostatic precipitators and dust hoppers.
- **Coal Handling Plant** – Disturbing coal by mechanical means such as delivery of and transporting coal to the site (e.g. when coal is dumped in hopper). Moving the coal around site with dozers and load shifting equipment or by conveyor belts). The potential for spills through belt faults/issues such as holes and or breakages. Storage of coal onsite such as wind causing coal dust to be released from the stock pile or from local traffic around the stockpile area.
- **Operations & Maintenance tasks** – Lack of adequate equipment inspection and maintenance activities that prevent dust build up, including delays in addressing system defects and leaks. During routine & maintenance activities in coal milling and crushing areas. And whilst maintenance is being carried out in fly ash collection areas including fabric filters, electrostatic precipitators and dust hoppers.
- **Industrial cleaning tasks (not overhaul linked)** - Inadequate cleaning regimes that allows excessive build-up of coal around equipment and structures such as belt systems, conveyors and surrounding work areas or from spillages.
- **Ash dam and Mining** – Handling and transportation operations of fly ash (loading of fly ash for transportation), and accumulated dust being raised from the ground by moving vehicles.
- **General traffic around site** – accumulated dust being raised from the ground or other surfaces by moving vehicles and people.

6.2 Specific tasks for generation of dust

As noted in the Code of practice 2018 “*Managing respirable dusts hazards in coal-fired power stations*”, studies of coal-fired power station workers have concluded that day-to-day operational exposures are likely to be **low**. However, there are some activities that are associated with airborne concentrations of respirable dust, may cause higher exposure areas possibly above exposure standards such as;

- Processes whereby coal is broken, crushed or milled to be incorporated to the fuel system
- Maintenance and cleaning activities, for example inside boilers, economisers, flue conveyance ducts, baghouses, electrostatic precipitators and ash silos
- During major overhaul work on power plant systems

Other tasks likely to expose workers to respirable dust can also occur when equipment with ash and/or coal dust build-up is repaired without removing the excess dust.

There are various roles undertaken by workers at power plants that may involve exposure to respirable dust. Workers at potential risk include but not limited to;

- Operations, Mechanical maintenance, electrical maintenance, on-trades maintenance, (e.g. Utility workers), industrial cleaners, overhaul, technical staff, coal unloading and handling plant personnel (rail conveyor, stock pile management), fly ash transport, bottom (furnace) ash transport, ash dam/mine void/cenosphere harvesting and storage.

Whilst the roles above are generic and could be workers or contractors (or both) depending on the operation. This list is a guide and all roles with potential exposure should be considered as part of a personal risk assessment.

Workers who may not be undertaking activities which generate dust should consider whether they could be exposed to respirable dust as a result of activities undertaken by other work parties in the area, and therefore require respiratory protection.

6.3 Assessing the risks from respirable dust exposure

There are a number of factors that affect the degree of risk associated with dust produced in power plant operations.

- The concentration of airborne dust in the breathing zone of the worker
- The size of the dust particles generated (inhalable or respirable)
- The duration of exposure
- The type of dust and it's biological effect

Air sampling (known as respirable dust monitoring) is conducted in the workplace to obtain an estimate of workers potential exposure for the following reasons;

- When there is uncertainty about the level of exposure
- To indicate whether the exposure standards are being exceeded or approached
- To test the effectiveness of the control measures

6.4 Respirable dust monitoring program

Certified Occupational Hygienists (COH) develops and reviews the respirable dust program at Callide. A dust monitoring program is developed on an annual occurrence, this is based on the findings of the baseline monitoring program. A quarterly monitoring program is in place.

An increase of personal sampling will be administered when major overhauls are being conducted on site, due to there being an increase in dust exposure and an increase in numbers of workers.

Following the collection of the minimum number of required samples in the SEG (Similar Exposure Group), occupational hygienists use descriptive and inferential statistics to estimate personal exposure.

6.5 Callide Similar Exposure Groups (SEGs)

Similar Exposure Groups (SEGs) have been identified at Callide power station. SEGs are groups of workers who have the same general exposure to risk, for example;

- The similarity and frequency of the tasks they perform
- The materials and processes with which they work
- The similarity of the way they perform tasks

SEGs at Callide are;

4.0 Callide PS Similar Exposure Group (SEG)	Organisational Groups	Code
4.1 CAL - Administration	Senior Management, Commercial, Health & Safety, Security, Procurement, Finance, HR	ADMC
4.2 CAL – Shift Production Operators	Shift Production SEG are engaged in the operation of the power station facilities associated with the generation of electricity. Shift is 12.5 hrs 4 on 4 off. A significant component of the work involves the operation of plant through a digital control system in a plant control room. Production operators involved in control room activities spend the majority of a working shift seated at a control panel, viewing a series of large LCD screens displaying the plant controls in real time. Operators (Outside) provide field support to the control room operators and perform manual checks and interventions on plant as required. Shift Operators	POPC
4.3 CAL - Mechanical Maintenance	Incorporating the maintenance employees covering both B and C stations and Common plant mechanical maintenance. Callide B and Callide C Unit Maintenance, Common Plant Maintenance groups including non-trade.	MMAC
4.4 CAL - E&IC Maintenance	The Electrical and Instrument Control (E&IC) Maintenance SEG performs maintenance and inspection functions on the plant control systems. These employees spend the majority of time in the field around plant systems interacting with electrical, instrumentation and IT equipment. Callide B and Callide C E&IC Maintenance technicians	EMAC
4.5 CAL – Ash Processing	SEG is involved in the management of the Waste Containment Facility (Ash Dam), and removal of ash and dust residues from the station to the dam for storage. Most of the work is performed from within earthmoving vehicles such as dump trucks, excavators and water trucks.	APRC
4.6 CAL – Coal Operations	SEG covers mobile equipment services to the coal stockpile. These are primarily contracted positions and involve extended periods operating mobile earthmoving equipment.	COPC
4.7 CAL – Field-based Supervisors	Field-based Supervisors oversee the actions of employees in production and maintenance functions during their work. This involves the scheduling, assigning and review of work performed on the station and may result in the supervisor being on the job site for a period. The remaining time is primarily spent in office or workshop environments. Maintenance Supervisors, Production Supervisors	FSUC
4.8 CAL -Technical Services	Provision of specialist technical supervision and advice to the power station operations and maintenance. A range of mechanical, electrical and civil engineering services are contained in the SEG along with overhaul planning and project management functions. Plant engineers are in the station on a daily basis for a varying period of time and are likely to be exposed to noise and dusts regularly. Specialist engineering functions spend time in the station at a lower frequency. Much of the engineering work is inspection-based with limited opportunity for exposures to chemicals aside from incidental exposure to dusts arising from leaks or fugitive emissions. Plant Engineers, Contracted Services, Overhauls, Technical Project teams, Chemists, Health & Safety are included as site based advisory functions.	TSEC
4.9 CAL - Chemical Operations	Consists of a small number of specialised production operators who oversee the operation of process water treatment plant outside of the main power station building. Also includes Laboratory personnel engaged in periods of time spent in the field and in office settings. Does not include Chemists – included in Technical Services.	CHEC
4.1 CAL – Facilities Maintenance	Encompasses a range of activities conducted by staff and contractors to provide industrial cleaning, domestic cleaning and domestic trades (such as Carpentry, Plumbing, air conditioning maintenance). Also, a small cohort of workers who provide grounds-keeping and vegetation management services.	FMAC
4.11 CAL – Warehouse	Personnel working both within the warehouse building and outside yard storage. Their activities involve the receiving and transferring of goods and equipment to undercover or yard locations. Much of this work is performed with forklift trucks. Warehouse, Tool store Officers	WARC
5.0 Overhaul Similar Exposure Group (SEG)	Organisational Groups	
5.1 Overhaul Industrial Cleaners	Groups – usually contractor employees – who typically work for finite durations on power station sites performing specific activities on overhaul.	OHIC
5.2 Overhaul Air Heater Repairs		OHAC
5.3 Overhaul Baghouse		OHBH
5.4 Overhaul Ducts & Burners		OHDB
5.5 Overhaul Ladders		OHLA
5.6 Overhaul Scaffolders		OHSC

The results of personal sampling for groups of workers performing similar tasks or working in the same area can be combined and analysed using statistical tools to provide an estimate of exposure for the SEG.

Job dictionary will extend out to contractor roles/tasks in the overhaul and an additional assessment component applied to a specific task for a potential generation of dust mechanism and other possible health hazards. A review of the current Job dictionary roles will take place to include the potential sources of dust generation mechanism and other possible health hazards. A review of the Job dictionary should occur approximately every 5 years or any time if a significant risk to health is recognized which is not currently known.

6.6 Shift arrangements & Dust sampling equipment

Exposure standards have been set for dust and are adjusted accordingly for changes in hours worked in each shift. At Callide power station the following table outlines the adjusted exposure standards for respirable dust and silica for the different shift arrangements.

Shift (hrs)	Respirable Dust (mg/m3)	Silica (mg/m3)
7.6 (5 on/2 off)	2.5	0.1
9.5 (4 on/3 off)	2.5	0.1
10 (5 on/2 off)	2	0.08
12 (4 on/6 off)	2.5	0.1

Equipment used to sample respirable dust should be subject to periodic calibration and maintenance, if relevant, as per *Australian Standard 2985-2009 Workplace atmospheres – Method for sampling and gravimetric determination of respirable dust* (AS 2985). Records of calibration must be kept.

6.7 Sampling methods

Sampling for inhalable and respirable dusts is undertaken in accordance with AS 3640-2009: Workplace atmospheres—Method for sampling and gravimetric determination of inhalable dust and AS 2985-2009: Workplace atmospheres—Method for sampling and gravimetric determination of respirable dust.

Sampling at Callide is done in 3 ways;

- Personal sampling – a dust measurements collected from within the breathing zone of the worker for at least 80% of the shift length. Measured against an occupational exposure standard (OES).
- Static sampling – fix monitor for set periods of time, used as an indicator for areas with perceived risk factors. This sampling is not able to be measured against an OES as personal sampling is.
- Real time sampling - a direct-reading device to measure dust concentrations, not routinely conducted at Callide as this cannot be converted to an OES. However, can be used to identify potential risks areas or whereby conducting a risk assessment where dust has been identified and/or a control is being measures for accuracy.

Laboratories performing analysis of respirable dust samples are certified to ISO/IEC 17025:2005 standards. Void or invalid samples will be noted but not used for estimating personal exposure.

7 CONTROLLING RESPIRABLE DUST RISKS

7.1 Dust Control Strategy

A Dust Control Strategy (refer to Callide Annual Improvement Plan – Respirable Dust Management) is developed to identify sources of dust generation which covers the following matters;

- identify sources of dust generation
- develop and implement dust controls for each activity
- follows the hierarchy of controls to manage the risk of dust exposure - the primary aim should be to limit dust exposure via the control of excessive dust emissions rather than relying on respiratory protective equipment which should be used as a secondary measure
- incorporate dust control measures into shift and daily routines and these are documented and adequately resourced in short-term and long-term planning processes
- review the effectiveness of controls in a systematic way
- inspect, maintain and monitor controls and equipment (by appropriately trained and competent persons).

A combination of controls is generally necessary to control exposure to crystalline silica dust. Wherever possible, wet processes and water suppression systems should be used to prevent dust generation and disbursement. Ventilation and good house-keeping will be necessary. Restricting access to the work area and staff rotation will assist in reducing exposure.

7.2 Elimination/substitution controls

New plant – When preparing specifications for installation of new plant, consider the uncontrolled discharge of airborne dust from plant into the work environment, dust suppression systems, maintenance schedules including inspection and repair of all seals where dust may escape.

Existing plant – Maintenance and regular checks of existing equipment to ensure design of plant keeps dust enclosed. If plant is modified, consideration must be given to eliminating dust emissions and a plant modification process will be followed.

7.3 Engineering controls

Mechanical handling – consider mechanical, automated and remotely controlled methods (minimise exposure to workers or remove workers from potential exposure)

Ventilation – dilute ventilation, local exhaust ventilation, implement dust suppression measures where dust generation is visible, use dust suppression measures (e.g. water trucks) on unsealed roads and access tracks.

Dust suppression techniques - Use water sprays or alternative dust suppression measures to manage dust generation from stockpiles.

7.4 Isolation, segregation or enclosure

Isolation – enclosed cabins with windows up at all times, air filtering systems to the intake and cabin recirculation on heavy mobile machinery, dust seals and effective pressurisation.

Exclusion zones – Exclusion zones may be necessary to protect workers in the vicinity from exposure to respirable dust. Signs should warn that there is a dust hazard present and access must be restricted to authorised persons.

7.5 Administrative controls

Housekeeping – good housekeeping must be maintained in work areas, regularly remove accumulated dust. Undertake regular inspections of the active work area in particular where known dust emissions occur. Schedule inspections and audits, identifying and implementing contingency actions.

Servicing and maintenance – machinery, plant, other production equipment regularly maintained (including spray water equipment). Maintain all dust covers, water sprays, dust extraction systems and other dust suppression systems and measures in good working order.

Take into consideration the wind speed, direction and the strength of temperature inversions in order to minimise the impact of windblown dust

Information, training, instruction and supervision - Familiarise all personnel associated with dust management activities with the requirements of this procedure. Include information on dust management requirements in site inductions or site communications where relevant. Conduct toolbox talks and develop environmental site notices and environmental awareness posters periodically highlighting dust management requirements.

7.6 Personal Protective Equipment

Respiratory protective equipment (RPE) – should never be used as the primary means for exposure control.

In all uses of RPE, a RPE program should be established in accordance with applicable sections of AS/NZS 1715:2009, *Selection, use and maintenance of respiratory protective equipment*, for particular filter respirators. RPE should be suitable for the task being performed. If relevant, a Safety Data Sheet (SDS) should be referred to ensuring the correct RPE is chosen.

Fit Testing –

Personnel required to utilise respiratory protective equipment are provided with appropriate training on the use and care of the device, and will undergo testing at least annually to ensure that the device issued provides adequate individual protection. Real time application of the porta count machine offers a visual seal (through a graph) for each person to achieve a pass.

Facial hair, including beards, moustaches, sideburns and stubble, can impede a respirator from sealing properly. Workers who are required to wear tightfitting respirators, must be educated in the most appropriate piece of equipment to allow a good seal of the respirator to the face.

Fit testing should be carried out by a competent person:

- each time a new make or model of respirator is issued;
- whenever there is a change in the wearer's facial characteristics or features which may affect the facial seal (e.g. large weight loss or gain).

A fit testing register should be maintained for records of all fitment testing undertaken for employees and contractors. The register should include the following:

- Description of respiratory protective equipment
- Training in the selection, application of the device, maintenance schedule requirements
- Face fit results
- Medical screening
- Position title
- Name of individual
- Company
- Date of test
- Method of fit testing

Maintenance of RPE - Respiratory protective equipment must be maintained and stored free from dust and water. If RPE is damaged it must be replaced. The user must check the equipment each time before use to ensure there is no damage to the equipment.

8 REVIEWING CONTROL MEASURES

Reviewing the effectiveness of control measures may be done in a number of ways;

- Additional air monitoring
- Reviewing current control measures are implemented, following an exceedance investigation
- Consult with workers
- Conduct workplace inspections
- Analyse incident reports and statistical data
- Review the site risk register
- Implement specific tasks for generation dust and link with Job dictionary tasks, reviewed every 5 years. Include the Overhaul SEG's.

8.1 Investigating Exposure Exceedances

Where a single air monitoring sample exceeds the exposure standard, or it is likely the worker has been exposed to respirable dust an investigation is required to determine if control measures were effective at the time of sampling or what additional control measures need to be implemented.

In Addition;

- A personal letter will be sent to the monitored worker where an exceedance was measured, and further discussion will occur as part of the investigation process.
- It may be necessary to resample a SEG following an exceedance if determined by the investigation.

Any SEG which exceeds 50% of the exposure standard is a trigger to undertake a review of exposure controls and their effectiveness.

9 HEALTH MONITORING

Respiratory health assessments may be necessary if a worker is exposed to a dust concentration greater than the recommended occupational exposure limit. A Chief Medical Officer (CMO) has been nominated to complete the respiratory health assessment for all CS Energy workers, as a registered medical practitioner that has experience with health monitoring. This is available for any worker who wishes to utilise this service at the expense of CS Energy. At a minimum the following techniques will be used to check a worker's respiratory health;

- A chest X-ray to be reviewed by two qualified b-readers with additional readers available for adjudication. A b-reader is a radiologist who has undertaken specialised training to detect coal dust lung diseases such as coal workers' pneumoconiosis, silicosis, mixed dust pneumoconiosis and progressive massive fibrosis.
- Spirometry (lung function) testing tool which is used to detect restrictive & obstructive lung conditions such as emphysema, bronchitis, dust induced fibrosis and acute silicosis.

In addition, respiratory questionnaire and a work history will be provided on site through the Health and wellbeing Specialist which is under the supervision CS Energy's CMO. All workers will have baseline respiratory health assessment completed in the pre-employment medical which includes, chest x-ray, spirometry testing, respiratory and work history questionnaire. If the results of these tests are abnormal then a referral will be made to a respiratory physician for further investigations and diagnosis. The Chief Medical Officer will complete an annual assessment of all hygiene monitoring completed and give advice of further recommendations for health surveillance.

10 REPORTING AND RECORD KEEPING

Personal records of monitoring must be kept confidential for at least 30 years after the record is made (40 years for reports relating to asbestos exposure).

10.1 Informing the worker

Where an exceedance is measured for an individual, the worker will receive a personal letter informing them of the sampling results. Affected individuals must be involved in the investigation to ensure effective control measures have been implemented. Workers in the SEG will be informed through toolbox meetings of monitoring results, in particular if an exceedance has occurred in their area.

10.2 Informing the Health, Safety and Environment Committee

Results of findings from the hygiene monitoring program will be presented at the Callide Health, Safety and Environment Committee. Individual's names will not be discussed but findings from the monitoring program, affected SEGs and corrective measures will be discussed.

10.3 Informing the Regulator

A summary of analytical results will be submitted to the WHS Regulator, including;

- the nature of the sample results
- details of results where a Single Sample Exceedance Result occurred (including details of existing controls in use and if RPE was in use, the type of RPE)
- the relevant work group where a Single Sample Exceedance Result has occurred
- any interim corrective actions, including:
 - what is being considered
 - the process for consideration
 - how actions will be determined.

In addition, the Regulator should be informed as soon as reasonably practicable following the investigation and the decision-making process relating to further action.

11 DEFINITIONS

Term	Definition
HRA	Hygiene Risk Assessment is a documented assessment of health hazards and qualitative risk assessments at CS Energy
Occupational Hygiene	Occupational hygiene uses science and engineering to measure the extent of worker exposure, and to design and implement appropriate control strategies to prevent ill health caused by the working environment. It helps employers and employees understand the risks, and promotes improved working conditions and working practices.
OES	Occupational Exposure Limit is the maximum permissible concentration of a given gas, vapour, fibre or dust in the air in the workplace
Qualitative Hygiene Risk Assessment	Evaluation of potential personal exposure to workplace chemicals, physical, radiological, and/or biological agents based on personal experience and professional judgment.
Quantitative Hygiene Risk Assessment	Evaluation of actual personal workplace exposure to chemical, physical, radiological, and/or biological agents using accredited numerical and mathematical analysis.
SEG	Similar Exposure Groups are groups of workers who have the same general exposure to health and hygiene risk
Job Dictionary	A Job Dictionary is created when an organisation's individual Job Task Analysis are combined to form one document. A workplace job dictionary details the physical, cognitive and behavioural demands of each job task performed along with the various environmental factors that impact the given task or role.

12 REFERENCES

Reference No	Reference Title	Author
	Work Health and Safety Act 2011	Qld Government
	Work Health and Safety Regulation 2011	Qld Government
	Code of Practice "Management of respirable dust hazards in coal-fired power stations" (2018)	Qld Government
	Hygiene Risk Assessment (HRA) - Callide	GCG
	Callide Annual Improvement Plan – Respirable Dust Management	CS Energy
B/D/11/30966	CS-OHS-43 Asbestos Management Plan	CS Energy
C/D/15/37419	Callide Asbestos Register	CS Energy
B/D/17/17210	CS-OHS-75 Health Hazard Exposure Management	CS Energy
B/D/10/7377	CS-AM-010 Plant Modification Procedure	CS Energy
B/D/12/11085	CS-OHS-36 Barricades and Signage Procedure.	CS Energy
	Hygiene Monitoring Schedule.	CS Energy
	AS 2985-2009: Workplace atmospheres—Method for sampling and gravimetric determination of respirable dust	
	AS 3640-2009: Workplace atmospheres—Method for sampling and gravimetric determination of inhalable dust	
	ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories	
	CS Energy HS Handbook	CS Energy
	AS/NZS 1715:2009, <i>Selection, use and maintenance of respiratory protective equipment,</i>	

13 RECORDS MANAGEMENT

In order to maintain continual improvement, suitability, safety and effectiveness of the organisation, CS Energy's registered documents will be reviewed on a two-yearly basis or at intervals specified by legislative or regulatory requirements. Review of controlled documents should occur where it has been identified that there are changes in technology, legislation, standards, regulation or where experience identifies the need for alteration to the content. Registered documents should also be reviewed following an incident, change management process, modification or where directed as part of a risk assessment process. A 'review' can simply mean that it has been identified, confirmed and appropriately recorded that no changes are required and that the existing process remains the same.

CS Energy must ensure that records are retained according to accountability, legal, administrative, financial, commercial and operational requirements and expectations. In compliance with records retention and disposal, all documentation created in relation to CS Energy business must be retained in line with minimum retention periods as detailed in legal retention and disposal schedules.