BUSINESS PROCEDURE

Occupational Dust Management

OHS-PROC-229

This document applies to:

Brisbane Office	☐	FEITH	☐	GFE Projects	☐
Iron Flow Battery SPS	☐	Meandu Mine	☐	Non-Operational Land	☐
SAMCo	☒	Stanwell Battery	☐	Stanwell PS	☒
Tarong Battery	☐	Tarong Site	☒	Wambo Wind Farm	☐
Wivenhoe Pipeline	☐				

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1.0 Purpose

This Business Procedure applies where occupational dust has been identified as a risk at the workplaces of Stanwell and its subsidiaries, or when undertaking activities under Stanwell's control. It applies to all employees, contractors and visitors to those workplaces and undertaking those activities.

2.0 Scope

This Business Procedure applies throughout Stanwell and all activities under Stanwell's control. It applies to all Stanwell employees and contractors, including visitors to Stanwell workplaces.

3.0 Introduction

Breathing in occupational dusts has the potential to result in a range of occupational illnesses and diseases depending on the:

- size of dust particle;
- composition of the dust particle and its effect on the body;
- concentration of dust particles in the breathing zone of the worker; and
- how often and the duration a person breathes in the dust.

Occupational dust is commonly differentiated between two sizes; inhalable or respirable. Inhalable dust particles are visible to the naked eye and are deposited in the nose, throat and upper respiratory tract. Respirable dust particles are so small they are invisible to the naked eye and reach deep into the lungs. The size of a dust particle will influence:

- how deep in the lungs it can be inhaled;
- where it will be deposited in the respiratory system; and
- whether the respiratory system can successfully clear the dust particle.

The composition of a dust particle will influence how the respiratory system responds to the particle once it has been deposited. If a dust particle is unable to be cleared from the respiratory system, it will remain in the lung tissue, potentially causing fibrosis (or scarring). If a dust particle is toxic, it may cause localised cellular dysfunction or death, or enter the bloodstream and cause systemic toxicity in the relevant target organ/s, or may cause an inflammatory or immune response that results in fibrosis.

4.0 Actions

To mitigate potential exposure to an identified occupational dust risk, it must be ensured:

- proactive dust management strategies are implemented (i.e. planned long term maintenance, identification of dust leaks);
- dust exposure risk is controlled through the application the hierarchy of controls to achieve the highest level of protection that is reasonably practicable in the circumstances;
- good housekeeping practices are employed (i.e. cleaning) to reduce dust accumulation;
- an occupational hygiene monitoring program focused on similar exposure groups (SEG) is implemented;
- adequate information, instruction and training is provided to workers who undertake tasks involving significant levels of dust;
- fit for purpose personal protective equipment (PPE) and fit testing for relevant respiratory protective equipment is provided.

5.0 Occupational Dust Hazards

5.1 Dust Types

The main classes of respirable and inhalable dust likely to be present at Stanwell include:

- respirable crystalline silica dust (containing greater than 1% quartz);
- coal dust and ash (containing less than 1% quartz);
- abrasive blasting dusts such as ilmenite and garnet;
- wood dusts;
- synthetic man-made mineral fibres (e.g. glass wool, rock wool and ceramic fibres);
- asbestos; and
- toxic dusts, i.e., lead.

Dust types and characteristics vary from site to site, particularly in the areas of coal feedstock.

Where applicable, refer to the following accompanying documents:

- *Monitoring for Occupational Coal Dust and Crystalline Silica Business Procedure (OHS-PROC-230);*
- *Asbestos Management Business Procedure (OHS-PROC-414);*
- *Synthetic Mineral Fibres Business Procedure (OHS-PROC-221);*
- *Lead Management Business Procedure (OHS-PROC-32); and*
- *Abrasive blasting Code of Practice 2021.*

5.2 Physical Risks

Physical risks associated with dust may include:

- obscuring of signs and instruments;
- abrasive damage to equipment;
- reducing light emission from light fittings; and
- In extreme cases, explosions from the ignition of combustible dusts (i.e. coal).

5.3 Combustible Dusts

Dust explosions usually occur where a high concentration of combustible dusts (or fibres) is dispersed in the air and subject to an ignition source (i.e. flame, hot surface or spark).

The classification of dust hazardous atmospheres is complex and depends on many factors, including the rate of dust dispersion, sedimentation characteristics and particle size. The relative hazard posed by a combustible dust depends on its ease of ignition and the severity of the resulting explosion.

Effective plant housekeeping must be implemented to reduce the risk associated with combustible dusts and prevent coal dust layers from accumulating (i.e. on I-beams, ledges and other surfaces). It must also be ensured:

- confined spaces are cleaned so high levels of dust cannot become airborne and pose a potential hazard; and
- potential ignition sources are identified and, where possible, eliminated.

For further information on the management of combustible dusts refer to:

- *AS/NZS 4745: Code of Practice for handling combustible dusts;*
- *AS/NZS 60079.10.2: Explosive atmospheres—Classification of areas—Explosive dust atmospheres;*
- *AS/NZS61241.3:1999 Electrical Apparatus for use in the presence of combustible dust-classification of areas where combustible dusts are or may be present for information on the use of electrical apparatus in areas;*
- *Corporate Strategy for Management of Hazardous Areas (ASM-PROC-STG-MAN-05).*

6.0 Dust Mitigation and Control Procedures

The *Dust Management Strategy (OHS-STR-02)* details Stanwell's minimum controls using the hierarchy of control methodology to achieve the highest level of protection that is reasonably practicable in the circumstances. The primary aim should be to limit dust exposure via the control of excessive dust emissions rather than the utilisation of respiratory protective equipment (RPE) which should be used as a secondary measure.

The general design of plant aims to keep dusts enclosed to ensure exposure to workers and others is minimised. When a situation occurs where dust escapes from the enclosed system, or the system is required to be opened for access, processes need to be applied to address the nature of the escape and to mitigate the need for workers to be in the location until controls are implemented.

Where enclosed systems are open during or as part of overhaul programs, the *Dust Management Strategy (OHS-STR-02)* will be incorporated into the relevant project Health, Safety & Environmental Management Plan.

Dust mitigation and controls may include but are not limited to:

- **Plant Modification:** Where excessive dust emissions from plant occur, it should be assessed to determine the practicality of modifying the plant to eliminate the cause of the problem. Where this is impractical or cannot be undertaken in the near future, then secondary controls should be implemented to ensure exposure is kept as low as reasonably practicable.
- **Engineering Control at Source:** Priority should be given to controls that will remove dust at the source.
- **Housekeeping:** Good housekeeping practices should be maintained in work areas. Dust and solid debris should not be allowed to accumulate and should be cleaned regularly.
- **Dust Removal:** Removal of as much of the dust as possible by either vacuuming or spraying with water. Compressed air should not be used to blow the dust away.
- **New Plant Specifications:** When preparing specifications for the installation of new plant the following factors should be considered:
    - the uncontrolled discharge of airborne dust from plant into the work environment is to be prevented or mitigated;
    - discharge of dust into working areas shall be prevented by the utilisation of dust suppression systems or dust extraction systems;
    - maintenance schedules include the inspection and repair of all seals from which dust may escape; and

- where there is a potential for explosion, no naked flame or welding is to be permitted until the area has been cleaned of excessive dust.

6.1 Personal Protective Equipment (PPE)

Appropriate PPE should be worn where excessive dust levels may be generated and where higher order controls cannot be applied. PPE may include respirators, safety goggles or face shields, gloves, and disposable overalls.

Where activities involve work which could disturb significant volumes of dust particulates a hierarchical approach to RPE should be applied as follows:

- Supplied air
- Positive pressure respirators
- Negative pressure full or half face respirators
- Disposable particulate respirators

The required filter and protection factor should always be considered when selecting appropriate RPE.

Employees should be trained in the correct use of RPE and, where required, be correctly fitted for the user's face. The frequency of face fit testing is as follows:

- workers within the significant or high risk SEG will be face fit tested annually;
- workers identified to be in a low risk SEG will be face fit tested biennially;
- or:
  - 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.

The Health, Safety and Environment Team will document face fit tests as part of a workers' health records. Outcomes of RPE fit testing will be discussed with the worker. Where a worker is not clean shaven, options on the types of appropriate RPE to be worn will be discussed.

All RPE shall comply with the provisions outlined in *AS 1715:2009 Selection, use and maintenance of respiratory protective devices*, and *AS 1716:2012 Respiratory protective devices*.

Replaceable filters, cartridges and disposable respirators should be replaced regularly in accordance with guidelines issued by the manufacturer. Safety goggles or face shields can be worn to avoid eye irritation or injury, especially when performing overhead work, the requirements for these should be considered as part of the relevant risk assessment for the work.

Skin irritation can be minimised by the use of gloves, loose fitting long garments or disposable coveralls and hygiene practices post-work to minimise exposure. Disposable coveralls may be worn if excessively high dust release is expected during the work; these disposable garments should be disposed of in the plastic bags with the other wastes associated with the job.
Dust booths and/or vacuum systems are available at coal-fired generation sites to assist with the removal of dust post-work and disrobing.

It is expected that contractors required to wear RPE are fit tested prior to attending site and are able to provide evidence that RPE fit testing has been completed upon request by Stanwell.

7.0 Monitoring Dust Exposure

Where it is determined that there may be a significant risk of exposure to workers from dust, then appropriate actions must be taken to determine the extent of the risk i.e. monitoring by an appropriately qualified person using the relevant Australian Standard for the type of dust.

For the monitoring process and communication of results for coal dust and crystalline silica, refer to *Monitoring for Occupational Exposure to Coal Dust and Crystalline Silica (OHS-PROC-230).*

Where monitoring indicates the likelihood of exposure at above 50% of the Safe Work Australia workplace exposure standard for an airborne contaminant, then steps must be taken to ensure the potentially exposed workers are adequately protected by utilising appropriate controls.

Records of air monitoring completed must be kept for 30 years and made readily accessible to persons at the workplace who may have been exposed.

8.0 Periodic Health Monitoring

Stanwell currently requires workers deemed to be in a high risk Similar Exposure Group (SEG) to participate in a full annual health monitoring assessment. Health monitoring comprises of the following components at a minimum:

- Height and weight.
- Audiometry (hearing) test.
- Spirometry (lung function) test and respiratory questionnaire.
- Discussion on use of PPE, such as RPE and hearing protection.
- Chest X-ray.

The results are discussed with the worker during their visit and compared against their baseline pre-employment and historical records to identify any abnormalities. If there are any abnormalities, for example if there is a decline in lung function, a referral may be provided to an Occupational Physician.

All workers who are not considered to be in a high risk SEG and have previously worked at generation sites and are still working for Stanwell are encouraged to participate in the program on a voluntary basis; this may have a different testing frequency to workers who are currently exposed to noise and dust at the generation sites. The frequency of health monitoring for previous and current site workers outside the high risk SEG will be determined by Stanwell's Chief Medical Advisor/ Occupational Physician.

Stanwell offers a voluntary respiratory assessment program to employees with current or previous dust exposure. The program is administered by Stanwell's Chief Medical Advisor or an Occupational Physician and may include a chest x-ray according to the *ILO International Classification of Radiographs of Pneumoconiosis*.

All health monitoring records are centrally managed by the Occupational Health Nurses, refer to *Pre-Employment Medicals and Periodic Health Monitoring Business Procedure (OHS-PROC-421).*

9.0 Responsibilities

9.1 Managers and Supervisors

Managers and Supervisors are to ensure:

- dust-related procedures are complied with;

- all attempts are made to reduce the exposure to dust to as low as reasonably practicable through the implementation of appropriate controls;
- where the potential of exposure to dust containing greater than 1% silica is possible, workers are informed of the associated risk and receive information in relation to the hazards;
- where RPE is utilised as part of the control regime, workers are instructed as to their correct selection, use and maintenance;
- ensuring workers understand the purpose of dust sampling and monitoring; and
- workers participate as necessary in the occupational hygiene monitoring program and relevant health monitoring.

9.2 Workers

All workers who undertake work that may involve exposure to occupational dust must:

- ensure work is undertaken in accordance with appropriate procedures aimed at minimising the generation of airborne dust:
- participate in dust monitoring programs and ensure personal dust sampling equipment is worn as directed and appropriately when requested;
- participate in health monitoring programs specific to the SEG worked in;
- PPE is used and maintained in accordance with the manufacturer's instructions and face fit testing is completed prior to use of all RPE; and
- any identified leaks or dust-related hazards are promptly reported.

9.3 Consulting Occupational Health and Hygiene Specialist

Consulting Occupational Health and Hygiene Specialist(s) are required to:

- undertake occupational health and hygiene work as directed by Stanwell;
- assess occupational exposure of workers at Stanwell sites using best practice occupational hygiene methodology and sampling techniques; and
- provide recommendations for improvements to Stanwell's hygiene management program based on observation of work activity, communication with Stanwell employees and representatives, and information provided by relevant Health, Safety and Environment Committees.

10.0 Training

Workers who undertake tasks where they are exposed to significant levels of dust should be provided with adequate information, instruction and training on:

- health information relating to the excessive exposure to different types of dust and in particular that containing respirable crystalline silica at levels greater than 1%;
- the importance of controlling the creation of airborne dust to the lowest workable levels;
- probable exposure levels associated with the type of job being undertaken;
- correct usage of PPE;
- the role and significance of dust sampling and monitoring.

11.0 Review, Consultation and Communication

Review:

This Document is required to be reviewed as a minimum every 5 years, or as knowledge is gained through the implementation of the site hygiene monitoring programs, and as Stanwell becomes aware of any external developments in dust management.

Consultation:
Consultation will occur in accordance with the *Health, Safety and Environment Consultation and Participation Business Procedure (OHS-PROC-13).*

Communication/Requirements after Update:
This Business Procedure will be available on GenNet.

12.0 References

Source	Reference
Legislation	• Queensland Work Health and Safety Act 2011 • Queensland Work Health and Safety Regulation 2011 • Abrasive blasting Code of Practice 2021 • Managing respirable dust hazards in coal-fired power stations Code of Practice 2023 • Managing respirable crystalline silica dust exposure in construction and manufacturing of construction elements Code of Practice 2022 • Managing risks of hazardous chemicals in the workplace Code of Practice 2023
Business Procedures	• Asbestos Management OHS-PROC-414 • Corporate Strategy for Management of Hazardous Areas ASM-PROC-STG-MAN-05 • Dust Management Strategy OHS-STR-02 • Hazardous Chemicals OHS-PROC-108 • Health, Safety and Environment Consultation and Participation HSE-PROC-13 • Lead Management OHS-PROC-32 • Monitoring for Occupational Exposure to Coal Dust and Crystalline Silica OHS-PROC-230 • Pre-Employment Medicals and Periodic Health Monitoring OHS-PROC-421 • Synthetic Mineral Fibres OHS-PROC-221
Standards and Methods	• AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective devices • AS/NZS 1716:2012 Respiratory protective devices • AS/NZS 4745:2012 Code of Practice for handling combustible dusts • AS/NZS 60079.10.2:2016 Explosive atmospheres - Classification of areas - Explosive dust atmospheres • AS/NZS 61241.3:1999 Electrical Apparatus for use in the presence of combustible dust - classification of areas where combustible dusts are or may be present • Safe Work Australia: Workplace Exposure Standards for Airborne Contaminants (2024) • Safe Work Australia: Interpretation of Workplace Exposure Standards for Airborne Contaminants (2024) • Australian Institute of Occupational Hygienists (AIOH) 2024, AIOH position paper: Respirable crystalline silica and occupational health issues.

13.0 Definitions

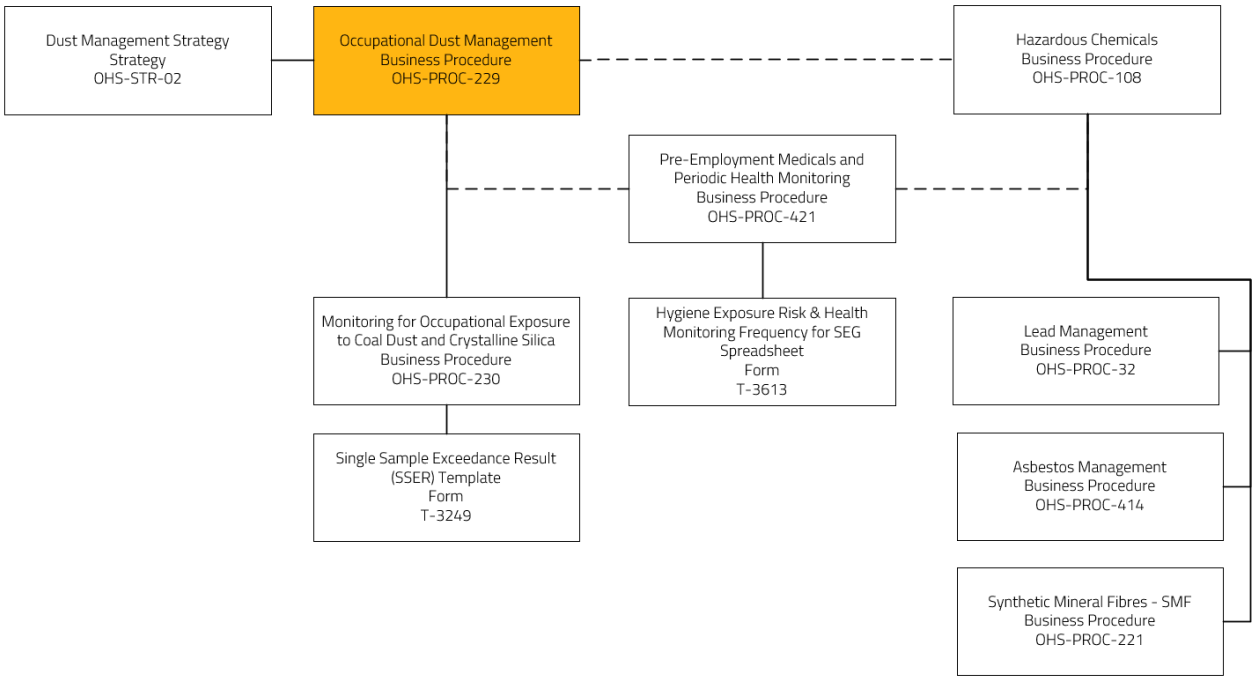
Term	Meaning
Chief Medical Advisor (CMA)	Occupational Physician that may be reasonably engaged by Stanwell to provide advice.
Combustible Dust	A dust that is combustible or ignitable in mixtures of air. Examples of such dusts include coal dust, charcoal, grain dust, starch and some metal dusts such as aluminium and magnesium.
Health Monitoring	Previously referred to as health surveillance, is to be provided to a worker where they carry out ongoing work using, handling, generating or storing hazardous chemicals or substances and there is a significant risk to the worker's health due to potential exposure to the hazardous chemical or substance.
Inhalable Dust	Particles (smaller than 100 micrometres) that are visible to the naked eye and are deposited in the nose, throat and upper respiratory tract.
The International Labour Organisation (ILO) International Classification of Radiographs of Pneumoconiosis	A chest x-ray performed and reported to ILO standards
Occupational Physician	An independent Medical Practitioner specialising in occupational medicine used to provide recommendations to Stanwell regarding the employee's ability to meet the inherent requirements of duties required to be performed by that employee.
Respirable Dust	Particles (smaller than 10 micrometres) that are able to penetrate into the alveolar region of the lung i.e. crystalline silica, asbestos.
Respiratory Protective Equipment (RPE)	RPE refers to devices designed to protect the wearer from inhaling hazardous substances, such as dust, fumes, gases, vapours, and biological contaminants
Similar Exposure Group (SEG)	SEGs are used to identify a group of workers who have the same general exposure to risks. This can include: • Similarity and frequency of the tasks performed. • The types of materials and processes used to complete tasks. • Similarity of the way tasks are performed.
Silica	Is silicon dioxide, which usually occurs as alpha quartz, a crystalline silica. It is the main component of sand, sandstone, granite and other rocks. It may also be found in varying quantities in coal and coal ash from less than 1% to greater than 20%, depending on the source of the coal.
Workplace exposure standard (WES)	An airborne concentration of a particular substance in the worker's breathing zone, exposure to which, according to current knowledge, should not cause adverse health effects nor cause undue discomfort to nearly all workers.

14.0 Revision History

Rev. No.	Rev. Date	Revision Description	Author	Endorse/Check	Approved By
0	24.04.2018	Consolidation of legacy documents	Jan Fullard	Owen Bevan	Michael Joy
	06.03.2019	Minor change only with References updated to include: Managing respirable dust hazards in coal-fired power stations: Code of Practice 2018 as Requested by Jan Fullard via email dated 22.02.2019, cc'd to Jason Paull and Kriss Ussher. No signatures required and Revision number remains at 0 and revision date not altered	D. Wood		
1	13.11.2019	Added face fit test frequency logic to document.	Kirsten Williams	Jason Paull	Kriss Ussher
	11.11.2021	Minor changes only with references to the old health surveillance procedure updated to the new one. And the term 'Health Surveillance' replaced with 'Health Monitoring'. As requested by Kirsten Williams via email 21/139678, cc'd to Letitia Lucke. No signatures required and revision number and date not changed.	S. Scott		
	21.07.2023	Minor change only – added reference to the new managing respirable crystalline silica dust exposure in construction and manufacturing of construction elements: Code of Practice 2023. As requested by Kirsten Williams via email request 23/86098, cc'd to Letitia Lucke & Carl Rothman. No signatures required and revision number and date not changed.	S. Scott		
2	07.05.2025	Reviewed and minor changes made, refer to 25/168351.	Jayde Smith	Kirsten Williams	Kriss Ussher

15.0 Appendices

Appendix 1: Occupational Dust Management Document Flow Chart



Source: CM 25/149677