

HRP09: Occupational Health and Hygiene

Section 1 - Purpose and Scope

- (1) The purpose of this procedure is to ensure the management of risks associated with occupational health and hygiene at Southern Cross University (SCU) are appropriately managed and controlled.
- (2) The purpose of this procedure is to ensure Southern Cross University's management, employees, contractors, students, visitors and others are aware of the risks associated with occupational health and hygiene in the workplace, management strategies and to provide advice on appropriate controls.
- (3) All employees, students and others including both independent contractors and contractors under SCU control are to be made aware of and follow this procedure.
- (4) This Procedure applies to all SCU Work Units and sites. The procedure aligns with WHS legislation in the relevant jurisdictions SCU operates in.

Section 2 - Definitions

Airborne Contaminant	A contaminant in the form of a fume, mist, gas, vapour or dust, and includes microorganisms.
Breathing zone	A hemisphere of 300 mm radius extending in front of a person's face and measured from the midpoint of an imaginary line joining the ears.
WES (Workplace Exposure Standard)	Represents the concentration of a particular hazard that must not be exceeded.
SEG (Similar Exposure Group)	A group of workers is expected to have the same exposure to a physical or chemical hazard.
Occupational Hygiene	Is the anticipation, recognition, evaluation, control of exposure to occupational hygiene hazards. Occupational Hygiene uses a combination of science, engineering and professional judgement in the process.
Qualitative Exposure Assessment	Evaluation of potential personal exposure based on personal experience and professional judgment.
Quantitative Exposure Assessment	Evaluation of actual personal exposure data using accepted numerical and mathematical analysis.
Route of Exposure	The route through which exposure occurs, such as ingestion or inhalation.
Peak Limitation	Means a maximum or peak airborne concentrations of a substance determined over the shortest analytically practicable period of time which does not exceed 15 minutes.
Short term exposure limit (STEL)	Means the time weighted average maximum airborne concentration of a substance when calculated over a 15 minute period..
Eight hour time weighted average (TWA)	Means the maximum average airborne concentration of a substance when calculated over an eight hour working day, for a five day working week.
Personal Monitoring	Measuring an individual's exposure using a valid monitoring technique.

Environmental Measurement	Taking a measurement within the workplace using a suitable sampling device or instrument.
Static/Para Occupational Measurements	Taking samples or measurements within the working environment to determine potential exposure, not actual exposure.

Section 3 - General Principles

Hazardous Occupational Hygiene Exposure Monitoring Program

(5) The potential exposure of employees and students to occupational health and hygiene hazards is to be risk-assessed within all work units. Formal occupational hygiene evaluations shall be conducted where there is potential for acute or chronic health effects from exposure to chemical and physical agents.

(6) An overall process of conducting an initial characterisation of occupational health hazards is to be conducted (see [Appendix 1](#) for flowchart). This can be conducted using both qualitative and quantitative means to assess potential exposures and development of monitoring and control plans where required.

Initial Characterisation for SCU Occupational Hygiene Monitoring Programs

(7) The initial characterisation aims to determine potential exposures to occupational health and hygiene hazards that require further monitoring and assessment due to the likelihood of adverse health effects. This involves a qualitative risk assessment, potentially including a walk-through of the workplace and preliminary measurement of exposure.

(8) The assessment process will:

- a. Start at the Faculty level and follow through to Work Unit level as appropriate.
- b. Identify potential exposures and define similar exposure groups (SEGs) with occupational exposures requiring further review and control, or no further action.

(9) Potential occupational health hazards include:

- a. Respirable dust
- b. Inhalable dust, including contaminants (e.g., lead)
- c. Welding/soldering fume
- d. Asbestos
- e. Crystalline Silica
- f. Hazardous substances (e.g., gas, vapor, liquid, solid)
- g. Noise
- h. Vibration
- i. Extremes of temperature
- j. Non-ionizing radiation (UV, welding flash)
- k. Ionizing radiation (alpha, beta, gamma, x-ray)
- l. Electromagnetic fields
- m. Biological hazards
- n. WHS Regulations Schedule 14 Hazardous chemicals

(10) A qualitative risk assessment shall determine:

- a. SEGS where no further action is required. This can include:

- b. SEGS expected to be exposed to <10% of the relevant OES.
- c. SEGS that use known control banding techniques to result in very low exposures. Such as the use of fume cabinets during work with hazardous chemicals, or gas monitoring systems that are alarmed.

(11) Risk assessments may not be recorded where there is not perceived to be a benefit, as the potential for exposure is so low and infrequent.

- a. SEGS that require further review and monitoring. This can include:
- b. SEGS expected to be exposed to >10% - <50% of the exposure standard.
- c. SEGS expected to be exposed to >50% of the exposure standard.
- d. SEGS where further review is required due to uncertainty.
- e. SEGS or exposures that have legislative requirements to assess exposure.
- f. SEGS that require immediate controls for unacceptable occupational exposures. This will include:
- g. SEGS expected to be exposed to >100% of the OES.
- h. SEGS where occupational disease is reported.

(12) The qualitative risk assessment will consider:

- a. Existing exposure monitoring data
- b. Current control measures
- c. Visual observation and other exposure indicators
- d. Work practices
- e. Worker experience
- f. Legislative requirements for chemical and physical exposure hazards

(13) See [Appendix 2](#) Qualitative Risk Rankings.

(14) The qualitative risk assessment will be recorded in RiskWare. The document is to identify any relevant occupational hygiene monitoring reports or health monitoring results. The assessment will be reviewed every five years or when a change occurs prompting the need for a review.

(15) Notification of risk assessments that determine a need for exposure monitoring or assessment will be made to the Work Unit Manager who will record the assessment in RiskWare and include it in the monitoring program.

Exposure Assessment

(16) Exposure assessments may be conducted using various techniques and over different time frames. Sampling methods include:

- a. Personal monitoring e.g. sampling inhalable dust exposure within the employees' breathing zone
- b. Static, para-occupational monitoring, or environmental monitoring e.g. gas monitoring
- c. Monitoring surveys e.g. a noise survey with a handheld sound level measuring device.
- d. Biological monitoring e.g. blood testing.
- e. Health surveillance results.

(17) Time frames for sampling include:

- a. Grab sampling: short-term sampling. Normally used to confirm the presence or identify a contaminant.
- b. Short-term sampling: 10-15 minutes. A series of these short samples may be used to calculate full shift exposure which can be compared with short-term exposure limits (STEL).

- c. Long-term sampling: full shift or greater than half of a working shift. This method can provide a time-weighted average (TWA) for the exposure period, peaks and STEL measurements in one method.
- d. Continued sampling: real-time measurement for the sampling period.

Additional Exposure Assessment

(18) Additional exposure assessments may be required due to:

- a. Incidents
- b. New research
- c. New substances
- d. New equipment/plant
- e. Legislative changes
- f. Risk assessments
- g. WorkCover claims
- h. Health Surveillance results
- i. Biological monitoring results
- j. Requests
- k. Exposure Assessment Monitoring Schedule

(19) A monitoring schedule will be produced from the information gained during the initial characterisation and risk assessment. The schedule will include:

- a. Identification of the SEG to be monitored
- b. Type of exposure assessment
- c. Frequency of monitoring
- d. Record of when monitoring is no longer required
- e. Relevant reports/records for the SEG
- f. Occupational Hygiene Reports

(20) Occupational hygiene reports prepared by SCU or external contractors should address the headings below:

- a. Introduction: date, location, commissioning person, monitoring aim
- b. Monitoring Methods and Equipment: sampling procedures, assessment standards, type of survey
- c. Analysis Method: method and technical standard
- d. Workplace exposure standard: standards used for comparison
- e. Background: process description, task history
- f. Results and discussion: results, sampling period, sample identifier, task description, monitoring period description, discussion
- g. Conclusions and recommendations: applying the hierarchy of control
- h. Calibration certificates
- i. Analysis certificates
- j. Personal exposure summary
- k. Separate results table with confidential names of participants

Workplace Exposure Standards

(21) Workplace exposure standards (WES) are defined for airborne contaminants and noise. The process for

determining if exposure monitoring is required is outlined in this procedure.

Airborne Contaminants

(22) Exposure standards for substances and mixtures must not be exceeded. Occupational exposure standards include:

- a. Time Weighted Average (TWA): This is a concentration of exposure for eight hours;
- b. Short-Term Exposure Limitation (STEL): This is a 15-minute TWA exposure limit that cannot be exceeded at any time during the working day. The STEL exposure cannot last longer than a 15-minute period, which is not repeated more than four times during the shift. There must also be at least a 60-minute interval between the exposures at the STEL.
- c. Peak limitation: This is the maximum airborne concentration of a particular substance determined over the shortest practicable period which does not exceed 15 minutes. The peak limitation must not be exceeded at any time.
- d. An 8-hour TWA occupational exposure standard is based on an 8-hour working day, a 5-day working week. Where the length of a shift is longer than 8 hours, more than 5 days are worked in a row, or more than 40 hours are worked in a week, an adjustment to the TWA OES may be required.
- e. When work shifts are longer than 8 hours or working weeks longer than 5 days adjustments will be required to determine if an WES has been exceeded.

(23) The Australian Institute of Occupational Hygienists (AIOH) recommends using the Quebec model to adjust for extended shift arrangements. TWA exposure standards must not be adjusted (increased) for shorter work shifts.

(24) The Safe Work Australia document "[Guidance on the Interpretation of Exposure Standards for Airborne Contaminants](#)" should be consulted when interpreting exposure standards to determine if shift adjustment is appropriate for the substance being monitored.

(25) The Peak limitations or short-term exposure limit exposure standards should not be adjusted. Where work shifts are longer than 8 hours, assessments of noise exposure (the measurement) must be normalised and adjusted as per AS:1269.1 (2005) to allow comparison with the LAeq,8h of 85 dB(A).

Alternative Exposure Standard

(26) Where an Australian WES does not exist, guidance from other sources may be used.

(27) The source of the alternative WES should be a recognised government or professional agency.

(28) Sources may include:

- a. Australian New Zealand Standards.
- b. Health and Safety Executive (United Kingdom).
- c. Occupational Safety and Health Administration (USA).
- d. Australian Institute of Occupational Hygienists.
- e. American Conference of Governmental Industrial Hygienists (USA).

Noise

(29) SCU must ensure that the noise a worker is exposed to at the workplace does not exceed the exposure standard. Audiometric testing is required for workers who are frequently required to use personal protective equipment (PPE) to protect them from the risk of hearing loss associated with noise that exceeds the exposure standard.

(30) The occupational exposure standard for noise is:

- a. LAeq,8h of 85 dB(A). This is the sound pressure averaged over the time period.
- b. LC, Peak of 140 dB(C). This is an instantaneous level that can cause immediate hearing damage.

(31) If hazardous noise is identified, then a noise assessment should be carried out unless the exposures can be reduced to below the standard immediately.

(32) A noise assessment should:

- a. identify which workers are at risk of hearing loss
- b. determine what noise sources and processes are causing that risk
- c. identify if and what kind of noise control measures could be implemented, and
- d. check the effectiveness of existing control measures

Audiometric Testing

(33) Audiometric testing is required where a worker is frequently required by SCU to use personal protective equipment to protect the worker from the risk of hearing loss associated with noise that exceeds the exposure standard for noise.

(34) Audiometric testing must be provided within 3 months of the worker commencing the work, and at least every 2 years.

Silica

(35) The workplace exposure standard (WES) for respirable crystalline silica (RCS) in Australia is 0.05mg/m³ (8 hour time weighted average) or adjusted WES for extended work for shifts. Air monitoring is required to determine the airborne concentration of a substance or mixture which has a WES if:

- a. you are uncertain on reasonable grounds whether or not the airborne concentration of RCS at the workplace exceeds the WES for RCS, or
- b. monitoring is necessary to determine whether there is a risk to health from RCS at the workplace.
- c. Air monitoring results must be provided to the Regulator if the airborne concentration of RCS has exceeded the WES for RCS.

Asbestos

(36) The exposure standard for asbestos is a respirable fibre level of 0.1 fibres/mL of air measured in a person's breathing zone and expressed as a time weighted average fibre concentration calculated over an eight-hour working day.

(37) SCU must ensure that the workplace exposure standard (WES) for asbestos is not exceeded at the workplace.

(38) Where there is uncertainty as to whether the exposure standard is likely to be exceeded, air monitoring must be carried out by a competent person. A competent person may include a licensed asbestos assessor or a person who has undertaken the endorsed unit of competency for licensed asbestos assessors. An occupational hygienist who has experience in asbestos exposure monitoring may also undertake air monitoring

(39) Refer to HRP 03 Asbestos Management Procedure

Monitoring Methods

(40) When occupational hygiene monitoring is conducted the method for measurement and analysis should be as stated in the relevant legislation or sourced from a recognised body.

(41) Recognised monitoring methods and sources are included in the table below.

Occupational Monitoring Methods

Occupational Hygiene Hazard	Source for Monitoring Method
Occupational Noise	AS/NZS 1269.1:2005 Occupational noise management - Measurement and assessment of noise emission and exposure
Whole Body Vibration	AS/NZS 2670.1:2001 Evaluation of human exposure to whole-body vibration
Inhalable Dust	AS 3640:2009 Workplace atmospheres - Method for sampling and gravimetric determination of inhalable dust
Respirable Dust	AS 2985:2009 Workplace atmospheres - Method for sampling and gravimetric determination of respirable dust
Various Airborne Chemical Hazards	Occupational Safety and Health Administration, Sampling and analytical Methods
Various Airborne Chemical Hazards	The National Institute for Occupational Safety and Health (NIOSH), Manual of Analytical Methods 4th Edition
Asbestos Fibre	Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC:3003(2005)]

Equipment

(42) Occupational hygiene monitoring equipment will be maintained, serviced and calibrated as required by the manufacturer's recommendations and the sampling methodology being applied.

(43) When equipment is hired, a copy of the calibration documentation will be obtained.

(44) Copies of calibration certificates will be included in the report as an attachment.

Health Monitoring

(45) For hazardous chemicals, health monitoring must be provided to workers if there is a significant risk:

- a. to worker's health because of exposure to a hazardous chemical listed in Schedule 14 of Work Health and Safety Regulation, or
- b. of exposure to another hazardous chemical (not listed in Schedule 14) and there are suitable testing methods available such as cyclophosphamide, ethyl benzene and nickel.

Asbestos

(46) The need for health monitoring for workers at risk of exposure to asbestos should be determined on the basis of:

- a. the potential for exposure
- b. the frequency of potential exposure, and
- c. the duration of the work being undertaken.

(47) A copy of the report must be given, as soon as reasonably practicable after obtaining it from the medical practitioner to:

- a. the worker
- b. the regulator, if the report contains: any test results that indicate the worker may have contracted a disease, injury or illness as a result of the work that triggered the need for health monitoring
- c. any recommended remedial measures, including whether the worker can continue to carry out the work, and
- d. all other businesses who have a duty to provide health monitoring for that worker.

(48) Reports must be kept as a confidential record for at least 40 years after the record is made and identified as a formal record for the particular worker. The report and results must not be disclosed to anyone without the worker's written consent unless required under the Work Health and Safety Regulation.

Respirable Crystalline Silica (RCS)

(49) Where workers are exposed, suspected of being exposed or are concerned about exposure to crystalline silica, SCU has a duty to arrange a health monitoring appointment for the worker(s) with the registered medical practitioner. Workers should undergo a medical examination annually.

(50) The medical examination should include:

- a. records of personal exposure
- b. physical examination
- c. standardised respiratory questionnaire and pulmonary function tests in accordance with appropriate quality guidelines, and
- d. chest X-Ray full posterior-anterior (PA) view.

(51) Reports must be kept as a confidential record for at least 30 years after the record is made and identified as a formal record for the particular worker. The report and results must not be disclosed to anyone without the worker's written consent unless required under the Work Health and Safety Regulation.

Section 4 - Roles and Responsibilities

(52) Refer to WHS Responsibility and Accountability Statement.

Section 5 - Records of Documentation

(53) All relevant documentation will be recorded and kept in accordance with WHS Legislation and other legislative obligations including:

- a. Occupational hygiene monitoring reports.
- b. Personal exposure letters/statements.
- c. A record of exposure sampling is to be kept in a spreadsheet by the WHS Unit. The record will include the date of sampling, monitoring conducted, and outcome/follow-up.

Section 6 - Revision and approval history

(54) This procedure will be reviewed as per nominated review dates or because of other events, such as:

- a. Internal and external audit outcomes.
- b. Legislative changes.

- c. Outcomes from management reviews.
- d. Incidents.

Section 7 - References

Work Health and Safety Act 2011
Work Health and Safety Regulation 2011 (QLD) 2017 (NSW)
Australian Institute of Occupational Hygienists
AS/NZS 1269.1:2005 Occupational noise management - Measurement and assessment of noise emission and exposure
AS/NZS 2670.1:2001 Evaluation of human exposure to whole-body vibration
AS 3640:2009 Workplace atmospheres - Method for sampling and gravimetric determination of inhalable dust
AS 2985:2009 Workplace atmospheres - Method for sampling and gravimetric determination of respirable dust
The National Institute for Occupational Safety and Health (NIOSH), Manual of Analytical Methods 4th Edition
Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC:3003(2005)]
Managing Risks of Hazardous Chemicals in the Workplace Code of Practice 2021
Labelling of Workplace Hazardous Chemicals Code of Practice 2021
Managing Noise and Preventing Hearing Loss at Work Code of Practice 2022 (NSW)
Managing Noise and Preventing Hearing Loss at Work Code of Practice 2021 (Qld)
Safe Work Australia Workplace Exposure Standards for Airborne Contaminants Guidance Material
Safe Work Australia Working with crystalline silica and crystalline silica containing products Guidance Material

Section 8 - Related Documents

WHSMP02: Hazard Identification, Risk and Opportunity Management Procedure
HRP03: Asbestos Management
HRP11: Hazardous Chemical Management
HRP13: Biological Safety
WHS Responsibility and Accountability Statement.

Status and Details

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Responsible Executive	Kim Franks Vice President (People and Culture)
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