# HEALTH SURVEILLANCE AND EXPOSURE HYGIENE MONITORING

## PURPOSE AND SCOPE

The purpose of the health surveillance and exposure hygiene monitoring system requirement is to provide guidance on the identification and management of health and hygiene risks associated with the works performed on our projects, operations, and workplaces.

It is the responsibility of a person conducting a business or undertaking (PCBU) to ensure that occupational exposures in the workplace do not exceed occupational exposure standards and are as low as reasonably practicable (using a risk-based approach).

This document outlines the process for occupational hygiene management of health hazards in the workplace that can result in injury, illness, impairment, or affect the wellbeing of workers and members of the community.

Occupational hygiene hazards may be biological, chemical, physical, ergonomic and psychosocial. This System Requirement outlines the process for anticipation, recognition, evaluation, and control of health hazardous in the workplace.

Compliance to this system requirement may require you to refer to:

- Primary Standard Asbestos
- Primary Standard Crystalline Silica
- Primary Standard Personal Protective Equipment
- Primary Standard Hazardous substances
- Primary Standard Fitness for work
- Primary Standard Psychosocial hazards
- Primary Standard Manual handling
- System Requirement Risk Assessment and SiD
- System Requirement Event Management and Reporting

## 1.0 ACRONYMS

Acronyms in this system requirement:

- ECPs – Exposure Control Plans
- HRA – Health Risk Assessment
- PRA – Project Risk Assessment
- SEGs – Similar Exposure Groups
- SFAIRP – So Far as is Reasonably Practical
- STEL – Short Term Exposure Limit
- TWA – Time Weighted Average
- WES – Workplace Exposure Standard

## 2.0 ROLES AND RESPONSIBILITIES

| ROLE | RESPONSIBILITIES |
|---|---|
| **PROJECT LEADER / DIRECTOR** | • Ensure a suitably qualified contractor is engaged to undertake the works and understands what requirements are needed to be fulfilled to manage any health or hygiene risks associated with the works.<br>• Develops and implements management strategies to mitigate health & safety risks and promote Rethinking Safety through Inclusion & Wellbeing principles.<br>• Ensures Project's Occupational Health and Hygiene Management Plan requirements are implemented. |
| **WORKERS / ALL STAFF** | • Participate fully in the occupational exposure and medical monitoring programs when required.<br>• Report to their supervisor/team leader any condition that has the potential to impair their ability to safely perform the functions of their position.<br>• Report to their supervisor/team leader of changing work conditions or ineffectiveness of controls prescribed.<br>• Undertakes or ensures compliance (this role or higher) with information provision, training, consultation and supervision requirements for workers. |
| **SUPERVISOR / FRONTLINE LEADER** | • Ensure compliance with the Project's Occupational Health and Hygiene Management Plan.<br>• Ensure air monitoring where implemented is functional.<br>• Support the implementation and maintenance of the occupational exposure and medical monitoring programs.<br>• Obligation to notify of changes in conditions or ineffectiveness of controls e.g., if revision to risk assessment is required. |
| **HEALTH AND SAFETY MANAGER** | • Establish and maintain familiarity with the occupational activities performed by workers.<br>• Develop and implement a health surveillance program to assist workers to be fit for work and recognise any disease that may develop due to workplace exposures.<br>• Determine or facilitate the determination of fitness for work for all workers.<br>• Ensure onboarding process includes briefing of health and hygiene risks and controls to workforce.<br>• Check that health and medical surveillance activities are carried out in accordance with the scope of work<br>• Conduct Project Risk Assessment which includes occupational health and hygiene risks as per SR Risk Assessments and SiD<br>• Ensures Project's Occupational Health and Hygiene Management Plan requirements are implemented and updated as required. |
| **OCCUPATIONAL HYGIENIST** | • Undertake Health Risk Assessments (Level 1, Level 2, Level 3)<br>• Undertake a risk assessment to determine groups of workers required to participate in health surveillance.<br>• Identify health hazards likely to influence the development of disease or health effects and identify the medical assessments that relate specifically to the detection of such and incorporate them into the medical assessment program.<br>• Assist to interpret the findings of medical monitoring reports and assist in implementing controls to remove the health risks.<br>• Provide recommendations and support the project to assist with implementing control measures to mitigate health and hygiene risks based on the risk profile. |

## 3.0 HAZARD IDENTIFICATION, RISK ASSESSMENT AND CONTROL (HIRAC)

Health and hygiene risk can arise from a range of activities conducted across Laing O'Rourke projects. To ensure health and hygiene risk are identified and managed appropriately, **Error! Reference source not found.** below is a process outline for projects to implement to complete the risk assessment and control cycle.

Each Project must identify potential health and hygiene risks as part of their Project Risk Assessments (PRA) for the lifecycle of the project. This preliminary assessment in the PRA will assist the Project in determining whether additional Health Risk Assessments are required and if an occupational hygienist should be engaged.

Factors to consider during hazard identification and risk assessment include, but are not limited to:

**CHEMICAL**

- Hazardous chemicals that may trigger the requirement for pre, during and post-employment worker health monitoring;
- The potential for worker exposure to airborne contaminants that are subject to a Workplace Exposure Standard (WES);
- Presence of crystalline silica in materials that may be released through the works;
- Prohibited and/or restricted carcinogens;
- The requirement or potential requirement for Lead Work;
- The potential route of exposure for chemicals and other hazards – inhalation, absorption, ingestion, injection.

**PHYSICAL**

- The presence of asbestos in the workplace, its management and removal (if necessary);
- The importation of products that are considered a high risk for containing asbestos;
- The use of equipment that contain sources of ionising radiation, such as borehole logging equipment, moisture gauges or industrial radiography equipment;
- Exposure to UV radiation;
- The use of lasers for construction or other purposes;
- Noise at the workplace, and the potential requirement for audiometric testing for workers
- Thermal working conditions and the potential for heat or cold stress.

**BIOLOGICAL**

- The potential exposure of workers to biological agents, such as bacteria and viruses, and the requirement for occupational immunisation;

**ERGONOMIC**

- Ergonomic risk factors including whole-body and hand-arm vibration;

**PSYCHOSOCIAL**

- Psychosocial risk factors, and the implementation of health and wellbeing programs (refer to 'Primary Standard Psychosocial hazards'

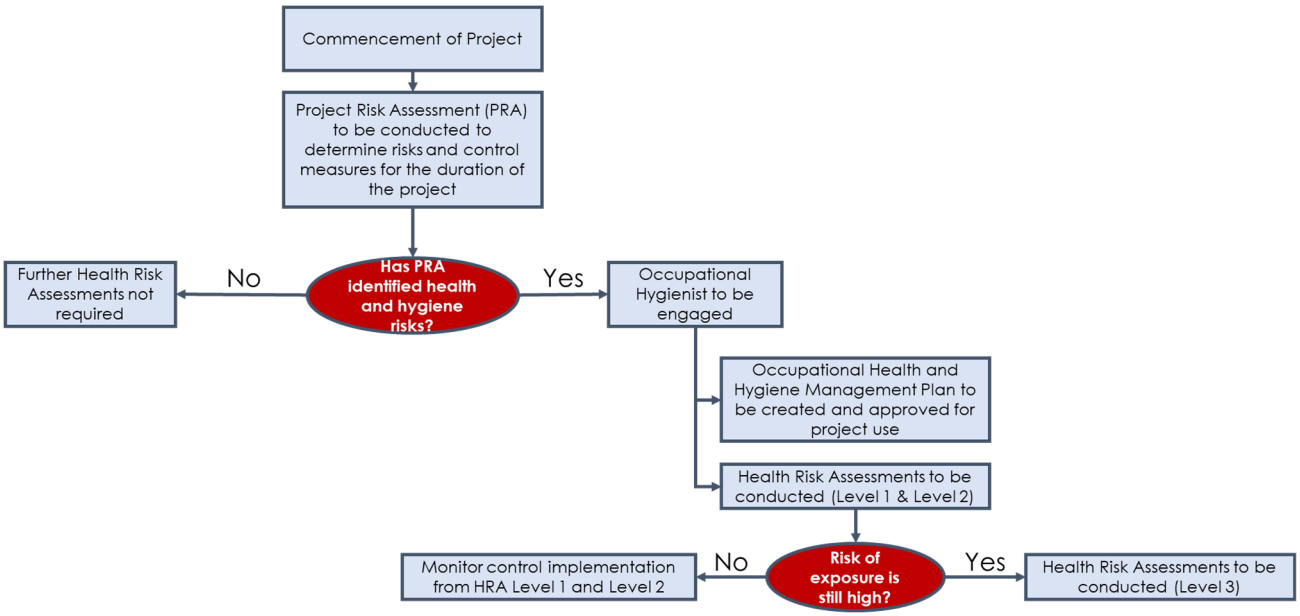


**Figure 1** Risk Assessment Flow Chart

## 4.0 HEALTH RISK ASSESSMENT (HRA) PROCESS

If the Project Risk Assessment identifies the presence of health and hygiene risk, Health Risk Assessments will be conducted. Occupational health risks will be assessed and evaluated in accordance with the following three assessment levels by a competent occupational hygienist:

- **Level 1** – Baseline Qualitative Health Risk Assessment
- **Level 2** – Qualitative Walkthrough Assessment
- **Level 3** – Quantitative Health Risk Assessment.

HRA activities will be conducted in consultation with relevant stakeholders with results:

- Documented, approved, and submitted; and
- Communicated to relevant personnel as soon as practicable following the risk assessment activities.

The assessment of health risk considers both acute and chronic exposures, such that the risk of both exposure scenarios is evaluated separately in determining the consequence, the likelihood of exposure and establishing the Risk Class by applying the Consequence and Likelihood to the Risk Assessment Matrix, see SR Risk Assessment and SiD for LOR risk matrix. In all circumstances, exposure sampling results will be assessed against the applicable WES for the purposes of evaluating occupational health risks and determining exposure acceptability.

According to SafeWork Australia:

- **'Not Significant'** risk to health may include circumstances where it is unlikely workers will be exposed at all to a hazardous chemical, or that they will be exposed to an amount of a hazardous chemical that is not expected to harm their health.
- **'Significant'** risk to health includes circumstances where workers are likely to be exposed to an amount of a hazardous chemical that could harm their health. For example, there may be a 'significant risk to a worker's health', if the exposure is high or the chemical is highly toxic.

The risk assessment will be conducted in accordance with the AIOH 2020 publication 'Simplified Occupational Hygiene Risk Management Strategies'.

The evaluation of occupational health risk and subsequent determination of controls will be performed in accordance with the risk acceptability criteria presented in the qualitative risk assessments. (Levels 1 and 2 – see below).

### 4.1 LEVEL 1 HEALTH RISK ASSESSMENT (HRA)

If the Project Risk Assessment identifies the need for further assessment, the next step is to conduct a Level 1 Baseline HRA. This must be conducted by a competent occupational hygienist, in consultation with relevant stakeholders, for the purposes of identifying and evaluating occupational health risks and exposure controls associated with the work activities to be performed and health hazards.

The Level 1 HRA includes a desktop review of available information, including existing historical data, where available, to characterize operations, processes, personnel and associated occupational health hazards for the purposes of:

- Identifying similar exposure groups (SEGs)
- Informing qualitative judgement of occupational exposures
- Identifying SEGs estimated to have a Significant Risk to Health
- Planning for appropriate controls, in accordance with the control hierarchy so far as is reasonably practicable.
- Prioritising controls where exposures are estimated to present a Significant Risk to Health utilising Exposure Control Plans (ECPs)
- Establishing quantitative exposure assessment and health surveillance activities
- Identifying the presence of potential hazardous materials via relevant known data and/or prior to any demolition or earthwork activities.

An independent hazardous materials auditor shall be engaged for any known location with hazardous materials, or when it is suspected or hazardous materials are identified as part of an unexpected find, including contamination in the ground. Introduced chemicals (chemicals brought in for productive construction purposes) are managed through PS Hazardous Substances.

### 4.2 LEVEL 2 HEALTH RISK ASSESSMENT (HRA)

Level 2 HRA is a formal qualitative risk assessment conducted by a competent occupational hygienist, following project commencement to document the exposure characteristics for each Similarly Exposed Group (SEG) to verify Level 1 HRA exposure estimates and make recommendations for further exposure control.

These Level 2 HRA includes:

- Physical inspection of work areas; review of processes and observation of work performance for the purposes of verifying the information, risk evaluation and perceived effectiveness of control measures documented in the Level 1 Baseline HRA.
- Engagement with the workforce to facilitate information sharing and enable Project teams to ask questions and raise issues requiring follow up.
- Provide documented recommendations for exposure control.

The results of Level 2 Qualitative Walkthrough Assessments will be documented and Exposure Control Plans (ECPs) updated to reflect those results where a SEGs exposure is estimated to present a Significant Risk to Health.

Level 2 Qualitative Walkthrough Assessments should be conducted at the commencement of each stage of works and will be revised annually or if the following scenarios are applicable:

- When there is significant change to the works, work methodology, environment or project or legal requirements
- Actual or potential class 1 events
- Adverse health effects identified by health surveillance.

### 4.3 LEVEL 3 HEALTH RISK ASSESSMENT (HRA)

Level 3 Quantitative Health Risk Assessments are performed to measure occupational exposure to occupational health hazard(s) for the purpose of evaluating compliance with relevant Workplace Exposure Standards and evaluating the effectiveness of exposure controls where Level 2 Qualitative Walkthrough Assessment results demonstrate:

- A SEG's risk of exposure presents a Significant Risk to Health; or
- Exposures could exceed, or have exceeded, the acceptable WES.

The requirement to perform Level 3 Quantitative HRAs will also be triggered in any of the following circumstances where:

- Exposures have aroused complaints or adverse symptoms directly or indirectly related to health hazards in or from the workplace;
- Changes in activities or processes could potentially increase exposures likely to impact health; or
- Concerns are raised with regards to the level of exposure.

The Level 3 assessment activities will be conducted by the competent occupational hygienist.

Level 3 Quantitative HRAs should be performed within one month following the Level 2 Qualitative Walkthrough Assessment for those SEGs assessed as having a Significant Risk to Health. However, practical assessment of hazards will be ranked and prioritised by risk, and no works will commence until controls have been implemented such that residual risks are as low as reasonably practicable.

Ongoing risk review frequencies (repeat assessments) must be no less than the frequencies specified in the following table, without considering the level of protection afforded by PPE.

**Table 1** Risk Acceptability Criteria for Level 3 Quantitative HRAs.

| Risk Class | Risk Acceptability | Minimum Risk Review Frequency |
|---|---|---|
| **Class A – Very High** | Risks that significantly exceed the risk acceptance threshold and need urgent and immediate attention. This represents a Significant Risk to Health. | Monthly |
| **Class B – High** | Risks that exceed the risk acceptance threshold and require proactive management. This represents a Significant Risk to Health. | Monthly |
| **Class C – Medium** | Risks that lie on the risk acceptance threshold and require active monitoring. | Two-Monthly |
| **Class D – Low** | Risks that are below the risk acceptance threshold and do not require active management | Quarterly |

## 5.0 WORKPLACE EXPOSURE STANDARDS

SafeWork Australia defines a Workplace Exposure Standard (WES) as the legal concentration limit of that chemical that must not be exceeded. WES are the airborne concentrations of a chemical that are not expected to cause adverse effects on the health of an exposed worker. However, WES is not intended to represent acceptable exposure levels for workers. They are simply the maximum upper limit prescribed by legislation. The table from Safe Work Australia lists a summary of potential WESs which may be applicable to your project. For more information on exposure limits, please see Safe Work Australia's Workplace exposure standards for airborne contaminants.

The occupational hygienist will apply the WES relevant to the state and territory requirements for the identified health risk. Further guidance is also provided in the associated Primary Standards.

## 6.0 RISK CONTROLS

Risk controls must be allocated in accordance with the Hierarchy of Control as outlined in the PS Risk Assessment and SiD. In the development and review of the PRA, controls must be selected to comply with or exceed requirements of legislation, codes and standards and be implemented So Far As Is Reasonably Practicable (SFAIRP). Risk controls must consider:

- legislation, relevant codes of practice, regulatory guidance and Australian Standards;
- current knowledge and awareness of the health issue available from reputable sources;
- compatibility with process and maintenance requirements;
- design criteria and engineering practices;
- protecting against all exposure routes;
- cost effectiveness;
- inspection and maintenance requirements to remain effective;
- emergency situations and the appropriate response; and
- review and evaluation of effectiveness.

Where elimination is not possible, sufficient time must be provided to consider substitution, isolation, and to design engineering controls to reduce the risk SFAIRP.

### 6.1 EXPOSURE CONTROL PLANS

Exposure Control Plans (ECPs) document control measures where risk assessment activities identify a Significant Risk to Health to ensure actions are assigned and are prioritised based on risk. This does not mean that non-significant risks do not require such controls, but rather focuses initial prioritisation of controls based on the higher risk actvities. ECPs include information on the following items:

- The hazard(s) and risks for which the ECP is being developed to control;
- Reference to relevant legislation, relevant codes of practice, regulatory guidance and Australian Standards;
- Roles and responsibilities including documenting who has accountability for each measure;
- Implementation of interim controls;
- Control measures listed in order of the hierarchy of control;
- Exposure controls, critical to preventing or mitigating worker exposure to *Significant Risks* to Health, shall be identified and prioritised for implementation and management, known as "critical controls";
- Inspection and maintenance requirements for the selected control measures to remain effective;
- Up-to-date training and competency requirements;
- Up-to-date hazard information;
- A process for regular consultation;
- A process for review and evaluation of effectiveness.
- Investigation mechanism for reported incidents;

The ECP's are used:

- To verify that the assessed risk can be managed to an acceptable level both prior to commencing work and during the work activity;
- As part of the Level 2 Health Risk Assessment (walkthrough) to verify if the nominated control measures are in place; if they appear to be operating effectively; and if there is a documented requirement for those controls to be performed. For example: 'is the control measure listed on a SWMS?';
- As a starting point to determine which control measures are critical to prevent or mitigate the Significant Risk; and
- For audit and compliance purposes.

## 6.2 HEALTH SURVEILLANCE

Health surveillance involves monitoring the health of employees to identify any changes that may be due to occupational exposure to a hazard. By focusing on bodily change and early intervention, health surveillance can contribute significantly to the prevention of illness and injury. Where it is determined that there is a potential hazardous exposure to any employee, consult with a medical practitioner/specialist (e.g., the same one who performs pre-employment medicals for the project or workplace) to develop a health surveillance programme. Pre-employment medicals provide a baseline against which employee health can be monitored. The sampling frequency, type of test and monitoring duration will depend on the:

- Substance/causation of what caused the effect or illness to be identified.
- Timeframe for the effect or illness to become evident according to ChemWatch or following advice of a medical practitioner/specialist
- Likelihood of individuals being affected
- Severity of the illness or ailment should individuals be affected
- Intensity, regularity and severity of exposure

Project staff and supply chain partners may be subject to mandatory pre-employment medical examinations or health assessments dependent on industry requirements and outcomes from the HRA. For Rail Industry health assessment requirements, refer to **Element 27 Health and Fitness.**

### 6.2.1 CONSULTING WITH EMPLOYEES AROUND HEALTH SURVEILLANCE

At induction and/or at a prestart meeting, Project teams must notify the employees of the hazardous substance, environment or activity, and the details of the health surveillance programme. Encourage employees exposed to hazards to report on their wellbeing. Refer workers to the company medical practitioner if there is any uncertainty if they have possibly been exposed to the hazard. All employees are allowed access to their own results.

### 6.2.2 SUPPLY CHAIN

Where supply chain activities may result in employee exposure to a hazardous environment, activities and substances, then it is the responsibility of the project or workplace leader to identify what health surveillance programmes the supply chain partner has in place. This is to be done at the supply chain partner pre-commencement meeting (using the Subcontractor Pre-Commencement meeting template) to ensure the supply chain partner has made provision for the programme. Where Laing O'Rourke has whole-of-site monitoring set up, this may negate the supply chain duplicating the process. When reviewing a supply chain partner's programme, it must be determined whether its intent complies with the Laing O'Rourke processes for health surveillance. If necessary, send the programme to the medical practitioner for review. The programme must be monitored to ensure it is implemented.

### 6.3 NOISE

Where a worker is required to regularly use PPE for protection against hearing loss from noise that exceeds the exposure standard, audiometric testing must be provided:

- Within three months of the worker commencing work
- At least every two years.

Monitoring hearing with regular audiometric testing is recommended in situations where workers are regularly exposed to:

- Any of the ototoxic substances listed in Appendix A of the Code of Practice where the airborne exposure (without regard to respiratory protection worn) is greater than 50% of the national exposure standard for the substance, regardless of the noise level
- Ototoxic substances at any level and noise with LAeq,8h greater than 80 dB(A) or LC, peak greater than 135 dB(C)
- Hand-arm vibration at any level and noise with LAeq,8h greater than 80 dB(A) or LC, peak greater than 135 dB(C).

## 7.0 MONITORING BY PRACTITIONERS, REPORTS AND RECORD MANAGEMENT

The worker must be consulted in relation to the selection of the registered medical practitioner; however, health monitoring must be carried out or supervised by a registered medical practitioner with experience in health monitoring. The employer must pay all costs associated with health monitoring. All reasonable steps will be taken to obtain a health monitoring report from the registered medical practitioner who carried out or supervised the monitoring and a copy of the report must be given to:

- The worker using, handling or storing a hazardous chemical, exposed to lead, asbestos or noise
- The Regulator, as determined by regulations
- All other Persons who have a duty to provide health monitoring to the worker.

Health monitoring reports must be:

- Kept as a confidential record for at least 30 years (40 years for asbestos) after the record is made and not disclosed to another person without the worker's written consent
- Identified as a record about the worker for at least 30 years after the record is made
- Not disclosed to another person without the worker's written agreement.

### 7.1 MONITORING EQUIPMENT

Inspection, testing and Monitoring equipment will be managed, controlled and calibration in line with **Laing O'Rourke Control and Monitoring of Inspection Equipment Procedure**, the project WHS Management Plan and records maintained.

## 8.0 HEALTH RELATED INCIDENT DEFINITIONS

Any individual exposure sample results that exceed the exposure standards or insufficient control measures are in place will be recorded as an incident and investigated to determine corrective actions required to reduce the risk to health.

Health related incidents are to follow the same reporting and notification process as safety incidents into IMPACT supported by the **System Requirement Event Management, Investigation and Reporting.**

## 9.0 COMMUNICATION AND CONSULTATION

Training and instruction will be provided to workforce and supply chain partners for the occupational hazards identified in the health risk assessment. Information, training, and instruction provided to a worker must be suitable and adequate having regard to:

- The nature of the work carried out by the worker.

- The nature of the risks associated with the work at the time the information, training or instruction is provided.
- The control measures implemented.

The induction process will provide extensive information on the range of occupational health and hygiene hazards and risks likely to be encountered at the project site. Further task specific or role specific training programs may also be required, such as specific training for crystalline silica dust in ACT and Victoria.

## 10.0 REGULATIONS, CODES AND GUIDELINES

Key Regulations, Codes and Guidelines are as follows:

- Work Health and Safety Regulation 2011 (QLD, ACT), 2012 (SA) and 2017 (NSW, NT):
  - Regulation 50 Monitoring Airborne Contaminant Levels
  - Regulation 58 Audiometric Testing
  - Part 4.1 Noise
  - Part 7.1 Hazardous Chemicals, Division 6 Health Monitoring
  - Part 7.2 Lead, Division 4 Health Monitoring,
  - Part 8.5 Asbestos, Division 1 Health Monitoring
  - Schedule 14 Requirements for Health Monitoring
- Dangerous Substances (General) Regulation 2004 (ACT), Regulations 335, 336 Atmospheric Asbestos Monitoring
- Work Health and Safety (General) Regulations 2022 (WA)
  - Part 4.1 Noise
  - Part 7.1 Hazardous Chemicals, Division 6 Health Monitoring
  - Part 7.2 Lead, Division 4 Health Monitoring,
  - Part 8.5 Asbestos, Division 1 Health Monitoring
  - Schedule 14 Requirements for Health Monitoring
- Occupational Health and Safety Regulations 2017 (VIC):
  - Sections 1.1.5 (Definitions), 2.1.3, 2.1.4, 3.2.11–3.2.14, 4.1.27, 4.1.30, 4.1.32, 4.3.109, 4.3.110, 4.4.10, 4.4.11, 4.4.20, 4.4.21, 5.3.14, 5.3.15
- WA Code Control and Safe Use of Inorganic Lead at work [NOHSC:2015(1994) – Safe Work Australia
- SafeWork Australia Codes of Practice:
  - Managing Risks of Hazardous Chemicals in the Workplace
  - Managing Noise and preventing Hearing Loss at Work
  - How to Safely Remove Asbestos
  - How to Manage and Control Asbestos in the Workplace
  - National Code of Practice for the Control of Workplace Hazardous Substances Section 13 Monitoring and Section 14 Health Surveillance
- SafeWork Australia guidance material:
  - Hazardous Chemicals Requiring Health Monitoring
  - Health Monitoring for Exposure to Hazardous Chemicals – Guide for PCBUs

  - Workplace Exposure Standards for Airborne Contaminants
  - Guidance of the Classification of Hazardous Chemicals under the WHS Regulations.
- Laing O'Rourke Control and Monitoring of Inspection Equipment Procedure

## 11.0 FORMS AND TEMPLATES

For relevant plans, forms and templates see the Laing O'Rourke HSEMS at www.lorhsems.com.