



safe work australia

Health monitoring

Guide for persons conducting a
business or undertaking

Introduction	3
How to use this guide	3
What is health monitoring?	4
When must you monitor the health of your workers?	5
Your duty to provide health monitoring	5
The health monitoring process	10
Consulting your workers	10
Engaging a registered medical practitioner	12
Organising health monitoring	13
Who pays for health monitoring?	13
How to test for exposure or health effects.....	13
Organising health monitoring appointments.....	14
Health monitoring reports.....	17
Actioning a health monitoring report	18
Record keeping for health monitoring reports	21
Further information	21
Appendix A – Health monitoring for hazardous chemicals.....	22
Hazardous chemicals requiring health monitoring.....	22
Examples of chemicals to consider for health monitoring.....	25
Appendix B – Checklist for providing health monitoring	29

Introduction

If you are a person conducting a business or undertaking (such as a business owner or workplace operator, referred to in this guide as a PCBU), this guide is for you. It explains what your duties are for monitoring the health of your workers under the model Work Health and Safety (WHS) Act and model WHS Regulations.

Safe Work Australia is a national policy body responsible for WHS and workers' compensation. We do not regulate or enforce WHS laws. When you monitor the health of your workers, you must follow the WHS laws that apply in your state or territory alongside other legislation, for example privacy laws and state and territory laws for handling personal information of your workers.

How to use this guide

This guide will help you to understand your duties as a PCBU to provide health monitoring for your workers. It will assist you to comply with your duties under the model WHS laws, but should not be relied on in the place of the full text of those laws.

In this guide we use 'must', 'requires' or 'mandatory' where you are legally required comply with an obligation. We use 'should' to recommend an action and 'may' where you can choose to do as we recommend.

Important terms used in this guide

This guide covers a PCBU's obligations to its workers. A 'worker' under the model WHS Act includes not only your employees, but also other persons who work for you, such as contractors, subcontractors and apprentices. When the term 'worker' is used in this guide be mindful that it captures this wide range of people.

Under the model WHS Regulations the hazardous chemicals that require health monitoring are listed in table 14.1 of Schedule 14. Lead and asbestos are also hazardous chemicals, but have slightly different health monitoring requirements. Information about health monitoring for lead and asbestos are also provided in this guide.

'Lead risk work' means work carried out in a lead process that is likely to cause the blood lead level of a worker carrying out the work to exceed:

- for a female of reproductive capacity - 5µg/dL (0.24µmol/L), or
- in any other case - 20µg/dL (0.97µmol/L).

Some specific lead processes are identified in the model WHS Regulations and your regulator may also identify additional lead processes.

A registered medical practitioner with experience in health monitoring must carry out or supervise your worker's health monitoring. In this guide, we refer to this registered medical practitioner as the health monitoring doctor.

What is health monitoring?

Health monitoring is the monitoring of a worker to identify changes in their health status because of exposure to certain substances. It involves a health monitoring doctor examining and monitoring the health of your workers to see if the exposure to hazardous chemicals at work is affecting their health.

You must ensure that health monitoring is carried out or supervised by an appropriate health monitoring doctor (see the *Health monitoring guide for registered medical practitioners* for more information about what experience your health monitoring doctor should have). If your workers have health monitoring regularly it is called a 'health monitoring program'.

The health monitoring doctor will choose the best way to monitor your worker's health and may use more than one way to monitor your worker's health. They will choose the best way by looking at:

- the regulatory requirements under the model WHS laws
- the type of chemical involved
- the way your worker is exposed
- the level of exposure
- if the work environment includes control methods or equipment to reduce the exposure, and
- if it is possible to use a proactive way to monitor adverse health effects.

Proactive health monitoring means monitoring your workers before they develop symptoms. This includes checking the level of a chemical or substance in your worker's blood or urine. Proactive monitoring is preferable to monitoring symptoms after they have developed such as markers of liver injury or changes in the blood cells of your worker.

Sometimes a worker is exposed to chemicals outside of the workplace, through food or water, and this information can also be captured during a worker's health monitoring program. This information can help the health monitoring doctor to better understand and help manage your worker's health monitoring program. You can read more about confounding effects and effects that are difficult to understand in the individual *Health monitoring guides for hazardous chemicals*.

You must never use health monitoring instead of implementing effective control measures. However, you can use it to see:

- how effective your control measures are, or
- whether you should apply new or more effective control measures.

A health monitoring program is only effective if you:

- act on the results of health monitoring that show early signs of, or a trend towards potential injury, illness or disease
- know when you should refer workers for health monitoring, and
- know how you should use the results of health monitoring to minimise risks to health and safety.

The health monitoring doctor will monitor your worker's health in different ways to assess exposure and the impact this has on their health. These are further discussed below.

Interviewing

The health monitoring doctor or other qualified person (such as an occupational nurse) can interview your worker and ask questions about:

- symptoms related to exposure
- previous occupational history, and
- medical history or lifestyle, for example dietary, smoking and drinking habits.

An interview may include your worker answering simple questions about their work, their personal hygiene at work or where they eat and drink at the workplace.

The health monitoring doctor will use the answers to assess your worker's current or previous exposure to hazardous chemicals.

Counselling

Counselling is where the health monitoring doctor educates your worker about the effect of their lifestyle on symptoms of workplace exposure, for example workers who smoke or bite their nails should be counselled on the risk of lead ingestion.

The health monitoring doctor might also discuss how exposure to certain chemicals can have an effect on reproduction, pregnancy and breastfed children.

Medical examination

The health monitoring doctor may use standard techniques to measure early or long term health effects, and they may do this regularly. They might check your worker's skin, eyes or hearing and collect baseline information to measure any future changes against.

Monitoring biological exposure

The health monitoring doctor may check the levels of a hazardous chemical or its metabolites (breakdown products) in:

- body tissues
- body fluids like urine or blood, or
- the exhaled breath of an exposed worker.

Monitoring biological effects

The health monitoring doctor may look at early biological effects, before your worker's health is harmed, for example by:

- blood tests
- monitoring your worker's liver or kidney function, or
- measuring the reduction of cholinesterase activity levels.

When must you monitor the health of your workers?

Your duty to provide health monitoring

You should carefully consider the hazardous chemicals your workers will or could be exposed to and how much they will be exposed. For lead and asbestos you should consider how they could be exposed. This will assist you to work out if you must monitor their health.

You must monitor the health of your workers for four types of chemicals:

- hazardous chemicals listed in table 14.1 of Schedule 14
- other hazardous chemicals (not listed in Schedule 14)
- lead, and
- asbestos.

You must monitor the health of a worker if they:

Hazardous chemicals listed in table 14.1 of Schedule 14

are using, handling, generating or storing hazardous chemicals and are at significant health risk from exposure to the hazardous chemicals listed in table 14.1 of Schedule 14 to the model WHS Regulations

- the type of health monitoring you must do for each chemical is also outlined in table 14.1 and provided at [Appendix A](#).

Other hazardous chemicals (not listed in Schedule 14)

are using, handling, generating or storing hazardous chemicals, **and** are at significant health risk from exposure to these hazardous chemicals, which are not listed in Schedule 14 and for which either:

- valid techniques or tests are available to detect an effect on your worker’s health, or
- valid way is available to determine biological exposure and you are not sure whether the exposure to your workers is more than the biological exposure standard

Examples of chemicals and the type of health monitoring are provided at [Appendix A](#).

Lead

start or do lead risk work

- you must follow the model WHS Regulations for the frequency and nature of health monitoring for lead risk work. For example you must begin health monitoring before your worker first starts lead risk work, or as soon as possible after the lead risk work is identified, and one month after your worker first starts lead risk work.
 - the type of health monitoring you must do for lead is outlined in table 14.2 and provided at [Appendix A](#).
-

Asbestos

are at risk of asbestos exposure when carrying out licensed asbestos removal at a workplace, or doing other ongoing asbestos work.

- you must start monitoring a worker's health before your worker carries out licensed asbestos removal work.

What is significant risk?

This part does not apply to you if your workers work with asbestos or perform lead risk work. If your workers are at any risk of exposure to asbestos or perform lead risk work, you must provide health monitoring regardless of the level of risk.

For hazardous chemicals, you must provide health monitoring to your workers if there is a significant risk to your worker's health because of exposure to a table 14.1 hazardous chemical, or significant risk of exposure to another hazardous chemical and there are suitable testing methods available.

As the PCBU, it is your responsibility to determine if there is a 'significant risk' of either of these things, to inform whether you need to monitor the health of your workers.

The level of risk depends on the hazards of the chemicals (what type of harm they might cause) and the frequency, duration and amount of exposure (also known as dose or how much your worker might be exposed).

You should consider a health monitoring program for all ongoing use, handling, generating or storage of hazardous chemicals by your workers. You should also consider a health monitoring program for the chemicals that are created as by-products or in work waste and have severe known health effects. This includes chemicals:

- known, or thought to be, carcinogenic, mutagenic or toxic to human reproduction
- that are respiratory or skin sensitisers, or
- with other known severe toxic effects.

You should also consider health monitoring for hazardous chemicals where you regularly use administrative controls or personal protective equipment (PPE) to control risks.

If you are not sure if a hazardous chemical is a significant risk to your worker's health or if your workers are at a significant risk of exposure, you can seek specialist advice from an occupational hygienist, health monitoring doctor, occupational physician or a WHS regulator. For hazardous chemicals not listed in Schedule 14, you should also consult your health monitoring doctor to see if suitable testing methods for the chemical are readily available.

What to consider when you conduct a risk assessment

Conducting a risk assessment involves collecting information about:

- the hazardous chemicals that are used, handled, stored or generated at your workplace
- what measures you use to control the risk of these hazardous chemicals
- where and how much workers can be exposed, and
- how often workers can be exposed.

You should consider:

- what, and how high, are the risks of each chemical:

- how the chemical is classified in the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)?
 - Is it an irritant, a sensitiser, a carcinogen, or an acute toxicant?
- what form of the chemical is used or generated at the workplace?
 - Is it solid, granulated, dust, mist, or fume?
- how the chemical enters the body to affect worker health? Is it by inhalation, ingestion, skin contact or absorption?
- how much your workers are exposed, thinking about:
 - where in the workplace the chemicals are used, handled, stored or generated?
 - who could be exposed?
 - how strong is the chemical when workers are exposed or what is the strength of the chemical that workers come in contact with?
 - what are the quantities and concentrations (pure or dilute) of chemicals being used, handled, stored or generated?
 - what are the standard work practices and procedures?
 - what are the ways individual workers carry out their daily tasks?
 - whether the way you currently control exposure is effective?

You are looking for information about how the chemical affects human health and how the chemical may be absorbed into the body. You should read the safety data sheet (SDS), label, or look in the Hazardous Chemicals Information System (HCIS) to find information on the hazardous chemical's nature and hazard severity. It is important for you to investigate and understand the physical properties of the chemicals because some gases or liquid chemicals can become more concentrated in the air.

Sometimes hazardous chemicals are generated at your workplace, for example your workers could make dust through cutting a product, or equipment workers use might generate fumes. These hazardous chemicals won't have a SDS or label available. In these instances you can ask the manufacturer or importer of the chemical, equipment or product for safety information.

It is important to consider how your workers might be exposed to a chemical, because the way your workers do their work could increase how much of the chemical they absorb and in turn increase the level of risk. For example, workers who are exposed during strenuous activity breathe more heavily and can inhale more of the chemical. The worker's individual characteristics can also increase the risk of health effects, for example their heart rate, respiration rate, diet, whether they are a smoker or have been previously exposed.

You can also do air monitoring or surface wipe testing to see how much workers are exposed and whether your current control methods are able to control the exposure.

How to work out the level of risk

In health monitoring, we generally describe the level of risk as 'not significant' or 'significant'.

'Not significant' may include circumstances where it is unlikely your worker 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.

As the PCBU, you should decide significance based on the acute (short term) and chronic (long term) exposure levels and the possible health effects.

A significant risk 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 exposure is high, where:
 - the chemical's airborne concentration is more than 50 percent of the workplace exposure standard
 - workers are exposed to a pure form of the chemical, or
 - workers can easily absorb the chemical through their skin
- if the chemical is highly toxic, where the chemical is classified according to the GHS as:
 - acute toxicant category 1 or 2
 - carcinogen, mutagen or reproductive toxicant
 - a respiratory or skin sensitiser, or
 - a specific target organ toxicant single or repeat exposure category 1.

It is important to consider the health effects to decide if a risk is significant, because individuals may react to hazardous chemical exposure in different ways. For example, they may be sensitive to certain chemicals or have past exposure that may change how they react. You should also consider routine health monitoring for workers exposed regularly to lower levels of hazardous chemicals because this may also be a significant risk to health.

The below table is a guide for when a significant risk may be present.

Table 1 Possibilities for describing the risk to worker's health when making decisions about health monitoring

Possibility	Description	Action
<p>The risks are significant, but the possibility of exposure is eliminated through effective controls</p>	<p>The hazardous chemical poses significant risk to your worker's health. However, the overall risk is not significant because you have eliminated the risks from hazardous chemicals by eliminating the risk of exposure in line with known, effective control measures, like those included on the chemical's SDS.</p> <p>For example, risks are low because the process is completely enclosed or workers are isolated from possible exposure.</p>	<p>You do not have to monitor health.</p>

Possibility	Description	Action
The risks are significant and despite control measures, exposure is possible.	<p>You think the risks are significant but your controls are not effective to eliminate exposure, resulting in possible exposure to your workers.</p> <p>For example, there is a risk of exposure that poses a significant risk to health because you think that the PPE is not being used properly.</p>	<p>You must monitor the health of your workers.</p> <p>You must review and revise the way you control the risks to eliminate or minimise the risks as much as possible.</p>
<p>There is:</p> <ul style="list-style-type: none"> • uncertainty about the risks • not enough information about the hazards, or • uncertainty about the amount of exposure 	<p>You are uncertain about the level of risks posed by the hazardous chemical or the amount of exposure to the hazardous chemical your workers are experiencing.</p> <p>For example, you don't know if exposure might have been more than the biological exposure standard.</p>	You must monitor the health of your workers.

Read the model Code of Practice: *Managing risks of hazardous chemicals in the workplace* for more guidance on controlling exposure to hazardous chemicals.

The health monitoring process

Once you determine that you need to provide health monitoring for your workers, you must:

- [consult with your workers](#)
- [engage a health monitoring doctor](#)
- [organise and pay for health monitoring appointments](#)
- [get a health monitoring report for each worker](#), and
- [keep records](#).

You should also action any recommendations made by a health monitoring doctor in their report as part of your duty to ensure, as far as is reasonably practicable, that your workers are given the highest level of protection against harm to their health. You must action a recommendation to remove a worker from lead risk work.

You can use the checklist in [Appendix B](#) to help you with the health monitoring process.

Consulting your workers

Participation of your workers in discussions about health and safety is important, as they are most likely to know about the risks of their work.

You must tell workers before they are hired, or before they start work about any health monitoring. For lead risk work and any asbestos work, you must tell workers why they need health monitoring and what it will be.

You should give the *Health monitoring guide for workers* to your workers who need health monitoring, so they have general information about their health monitoring.

You must consult workers about the health monitoring doctor you choose to supervise or perform the health monitoring. Genuine consultation involves you talking with your workers about this before you engage the health monitoring doctor.

You should inform workers about:

- what is expected in their health monitoring program
 - for example, the types and frequency of tests
- when they should see the health monitoring doctor
- how a health monitoring doctor is chosen and their qualifications
- who pays for the health monitoring
- if and how monitoring results may affect their work
 - for example, explaining where they may be moved to other tasks, and
- how you keep their health monitoring records and who they may be disclosed to and under what circumstances.

Sometimes, the health monitoring doctor will also give your worker information about:

- possible health effects from exposure
- what health monitoring aims to achieve and its benefits, and
- how and who to report symptoms to.

You should tell workers that you will keep their health monitoring results confidential and carefully stored, and that you will only share them with your worker's written consent, or when required by the model WHS laws, or other laws, with:

- the regulator
- the business or undertaking they work for
- other PCBUs who have a duty to provide health monitoring for your worker, or
- another health monitoring doctor.

There are other things you must consult your workers about at the workplace. Please read the model Code of Practice: *WHS consultation, cooperation and coordination* for more information about consultation.

What if a worker doesn't want to do health monitoring?

As a PCBU, it is your primary duty to ensure, so far as is reasonably practicable, the health of your workers. You also have a duty to monitor their health and your workplace conditions to prevent injury, illness and disease.

Workers also have a duty to comply with any reasonable instruction given by you to enable you to comply with WHS laws, including participating in health monitoring and wearing PPE when working with certain chemicals.

You should encourage your workers to talk to you about concerns they have with their health monitoring program. You can also refer them to your health monitoring doctor to talk about the

clinical aspects of health monitoring, or to their HSR, if your workplace has one, or their personal General Practitioner (GP).

If your worker still doesn't want to do health monitoring, you must comply with your duties under the WHS laws, which may include stopping them working with the hazardous chemical.

Engaging a registered medical practitioner

You must use a registered medical practitioner with experience in health monitoring (a health monitoring doctor) to carry out or supervise health monitoring. You will find information about 'experience in health monitoring' in the *Health monitoring guide for medical practitioners*.

You can choose who you like as your health monitoring doctor, provided you have genuinely consulted your workers regarding this choice and the doctor is experienced in health monitoring. Your health monitoring doctor could be employed by a company, in a medical practice, in a specialist occupational health organisation or they may provide specialist services and testing like respiratory screening and chest X-rays.

The health monitoring doctor should prepare a health monitoring program and either carry it out themselves or supervise other suitably qualified people, like an occupational health nurse, to deliver the program. The health monitoring doctor has overall responsibility for the health monitoring program.

The health monitoring doctor may visit the workplace to better understand your control measures, work processes and exposure scenarios. They may also seek advice from you as the PCBU, other professionals like an occupational physician, or other work health and safety professionals.

Information you must provide to the health monitoring doctor

As the PCBU, you must provide your health monitoring doctor with the following information:

About the business and your worker

- name and address of your business or undertaking, and
- the name and date of birth of your worker.¹

About the work

- the work that your worker is, or will be, carrying out that has made you to seek health monitoring, and
- if your worker has already started, how long they have been carrying out the work.

You should provide extra information to your health monitoring doctor including:

- relevant risk assessment reports, details of workplace exposure standards and results of workplace air monitoring
- a list of the hazardous chemicals your worker is or will be exposed to and the dates your worker last used the chemicals, and
- the SDS for the chemical(s).

¹ You may need to gain your worker's consent before supplying any extra information.

It is important to provide this information to the health monitoring doctor so they can design an effective health monitoring program for your worker. This information will help the health monitoring doctor to understand the situations and potential exposure levels that a worker could be exposed to. If you provide information about other hazardous chemicals your worker may be exposed to, the health monitoring doctor may be able to identify other or more severe effects. You should include information about likely workplace exposures in your risk assessment reports including control measures to reduce exposure and your investigations where workplace exposure standards have been reached or exceeded.

Health monitoring report templates are provided in the individual *Health monitoring guides for hazardous chemicals*. These may help you to prepare information for the health monitoring doctor. However the health monitoring doctor does not have to use them and they may have their own preferred forms. You should discuss what information is included in a health monitoring report with your health monitoring doctor to ensure you meet your duties.

Organising health monitoring

As the PCBU, you must:

- use a health monitoring doctor, and
- arrange health monitoring appointments for your workers where there is a significant risk to their health because of exposure to a hazardous chemical, they are at risk of exposure to asbestos, or they are conducting lead risk work.

You can make one-off health monitoring appointments if a worker has concerns about potential exposure. For example if there was a leak or spill, or if your worker's personal situation changes and their risk of harm from exposure has changed.

A checklist for providing health monitoring is included in [Appendix B](#) to this Guide.

Who pays for health monitoring?

As the PCBU, you must pay for your worker's health monitoring including:

- health monitoring appointment fees
- testing and analysis costs
- time to attend appointments and testing procedures, and
- travel costs.

If you and other PCBUs are jointly responsible for monitoring a worker's health and one of you has arranged the health monitoring, you must share the costs equally, unless you agree otherwise. For example, you may agree one of you will pay more of the costs.

How to test for exposure or health effects

If your workers use the chemicals listed in table 14.1 of Schedule 14 to the model WHS Regulations, the health monitoring doctor must use specific health monitoring tests for those chemicals. The chemicals and their tests have also been provided for you at [Appendix A](#).

A health monitoring doctor can only use other tests if they can detect health effects or biological changes and are equal to or better than the tests in Schedule 14. It is important to closely

consult with your worker and the health monitoring doctor if other tests are to be used. The health monitoring doctor must recommend the alternative method before it is used. More information about this can be found in the *Guide for registered medical practitioners* and in the individual *Health monitoring guides for hazardous chemicals*.

If there is a [significant risk](#) to workers from exposure to other hazardous chemicals that are not listed in table 14.1 of Schedule 14, you should discuss what tests can be used with your health monitoring doctor and consult with your workers before you arrange health monitoring. The health monitoring doctor should use health monitoring that measures exposure or detects harmful effects early on, so you can take action as soon as possible. The tests should be practical, accurate and safe, and should be appropriate for your worker and their circumstances. Some examples of other hazardous chemicals not listed in Schedule 14 and their tests are also provided for you at [Appendix A](#).

Table 2 Examples of health monitoring test methods

Situation or type of chemical	Test method
Biological exposure monitoring	
Where exposure causes that chemical or a metabolite to appear in urine, blood or exhaled air	Assess exposure from routes like ingestion, inhalation or absorption through the skin, by analysing urine, blood or exhaled air for levels of the chemical or metabolite or breakdown products.
Biological effect monitoring	
For a chemical that causes respiratory irritation or reduced respiratory function	A respiratory questionnaire or spirometry, or lung function test, or both to assess the effects of inhaling a chemical.
For a chemical that causes specific observable health effects including skin or eye irritation or a rash	Simple observation of your worker's eyes and skin by a competent person, for example an occupational nurse, or the health monitoring doctor may train your worker to observe and report themselves.

Where a valid health monitoring test is not available or the link between work and illness is unclear, the health monitoring doctor may review your records of worker absences.

Organising health monitoring appointments

You should make sure health monitoring has minimal impact on your worker and make sure activities like medical appointments are during your worker's normal work hours.

When you should monitor health

The timing of health monitoring should be organised depending on the chemical being used, handled, generated or stored and the way a chemical is being used. This may include monitoring worker's health:

- before they start work
 - this is known as baseline monitoring

- if they are excessively exposed
 - for example, after spills or loss of containment
- where your worker has concerns about exposure
 - for example, where they notice relevant symptoms, and
- when your worker finishes working with the hazardous chemical.

Health monitoring before starting work

Baseline monitoring is provided to workers before they start work with certain chemicals and varies for each chemical:

- sometimes it involves collecting workers' demographic data, previous work history and medical history, or
- it may be a physical examination, checking of respiratory function or skin checks and testing of urine, saliva, mucus, hair or blood.

Health monitoring during work

The health monitoring doctor will include regular checks and tests in a worker's routine health monitoring program.

How often your worker's health is monitored will depend on the hazardous chemical they work with, how much they may be exposed and their work processes. It may also depend on:

- frequency of use
 - for example, daily, weekly or seasonal use of certain chemicals
- previous health monitoring, air monitoring or surface wipe testing results, and
- if workers report symptoms of exposure or signs of injury, illness or disease linked with their use of hazardous chemicals.

If your workers report symptoms this may indicate that your control measures may not be working effectively and you should review these and take remedial action. Read the individual *Health monitoring guides for hazardous chemicals* for more information on the exposure symptoms your workers may report.

You may also organise one-off health monitoring checks if there is a spill, leak or loss of containment at work.

Health monitoring when work finishes

A final health monitoring appointment should be organised when your worker stops working with a hazardous chemical, for example when they finish employment or change their job role.

Health monitoring for inorganic lead

There are extra health monitoring requirements for workers involved in lead risk work, under the model WHS Regulations. These include:

- how often biological monitoring must be done
- when the amount of monitoring must increase
- when workers must be removed from lead risk work
- when a worker can return to lead risk work, and

- arranging a medical examination for your worker within seven days after they stop lead risk work.

If you have identified lead risk work, worker health must be monitored:

- before your worker first starts lead risk work, and
- one month after your worker first starts lead risk work.

If you identify work as lead risk work after a worker starts, their health must be monitored:

- as soon as you can after you have identified the lead risk, and
- one month after the first health monitoring.

Biological monitoring for lead involves monitoring blood lead levels. How often biological monitoring must be done is specified in the WHS Regulations (regulation 407) and is dependent on:

- blood lead levels detected at the last biological monitoring appointment
- if your worker's potential exposure changes, or
- any requirements set by the regulator about the frequency of monitoring.

The types of health monitoring required for lead include demographic, medical and occupational history, physical examination and biological monitoring.

Blood lead levels at the last health monitoring appointment

You must arrange biological monitoring for each worker who does lead risk work at the following times:

- for females not of reproductive capacity and males:
 - six months after the last biological monitoring of your worker if the last monitoring shows a blood lead level of less than 10 µg/dL (0.48 µmol/L)
 - three months after the last biological monitoring of your worker if the last monitoring shows a blood lead level greater than or equal to 10 µg/dL (0.48 µmol/L) but less than 20 µg/dL (0.97 µmol/L), or
 - six weeks after the last biological monitoring of your worker if the last monitoring shows a blood lead level of greater than or equal to 20 µg/dL (0.97 µmol/L)
- for females of reproductive capacity:
 - three months after the last biological monitoring of your worker if the last monitoring shows a blood lead level of less than 5 µg/dL (0.24 µmol/L), or
 - six weeks after the last biological monitoring of your worker if the last monitoring shows a blood lead level of greater than 5 µg/dL (0.24 µmol/L) but less than 10 µg/dL (0.48 µmol/L) (blood lead levels higher than this requires your worker to be removed from lead risk work).

If exposure changes

You must increase how often biological monitoring is done if your worker does work that may expose them to more lead, or expose them for longer periods or expose them more often.

How often the WHS regulator recommends monitoring

The WHS regulator may decide to change how often you must do biological monitoring after considering:

- what the work is and how long and how often workers are exposed to lead, and

- how likely it is that your workers' blood lead levels will significantly increase.

If this happens, the WHS regulator must give you written notice within 14 days after making this determination. You must then arrange biological monitoring for workers as determined by the WHS regulator.

For more information, see Part 7.2 and Table 14.2 of Schedule 14 to the WHS Regulations or the section on inorganic lead in *Health monitoring guides for hazardous chemicals* or contact your local WHS regulator in your state or territory.

Health monitoring for asbestos

There are specific health monitoring requirements for workers who work with asbestos.

You must monitor the health of a worker if they are at risk of asbestos exposure and carrying out:

- licensed asbestos removal work, or
- other on-going asbestos removal work or asbestos-related work.

Asbestos health monitoring includes a baseline medical assessment that records:

- your worker's demographic, medical and occupational history
- previous personal exposure, and
- a physical examination with emphasis on the respiratory system.

You will find more information about health monitoring for asbestos in Chapter 8 of the WHS Regulations and the model Code of Practice: *How to safely remove asbestos*.

Please read *Health monitoring guides for hazardous chemicals* for more details about how often workers should be tested when they are exposed to specific chemicals.

Health monitoring reports

The health monitoring doctor completes the health monitoring report in two sections:

- Section one: the health monitoring doctor must give you a copy of this part, and
- Section two: the health monitoring doctor keeps this section.

You must take all reasonable steps to get your copy of section one from the health monitoring doctor as soon as practicable after the health monitoring. You must get this section at regular intervals for workers on longer term or ongoing health monitoring programs.

Content of health monitoring report

The health monitoring doctor must put certain information in section one of the health monitoring report. To ensure you are meeting your duties, you must check it contains:

- the name and date of birth of your worker
- the name, registration number and signature of the health monitoring doctor
- name and address of the business or undertaking
- the date(s) of health monitoring
- any advice that your worker may have contracted an injury, illness or disease as a result of carrying out work that requires health monitoring

- any recommendation that you take remedial measures including whether your worker can continue to do the type of work, and
- whether your worker requires medical counselling or specialty medical advice about the injury, illness or disease.
- for health monitoring for hazardous chemicals specifically,
 - test results that show whether or not your worker has been exposed to a hazardous chemical
- for health monitoring for lead specifically:
 - the results of biological monitoring that indicate blood lead levels in your worker's body
 - test results that show your worker has reached or exceeded the relevant blood lead level for your worker under regulation 415 of the model WHS Regulations
 - the date of the blood sampling, and
 - details of the pathology service used

Section one should also contain:

- the date of sampling if blood, urine or other samples are taken, and
- results of biological monitoring and other tests carried out.

Your copy of section one should only report information about the health monitoring program. It should not report health information other than what you need to know to help monitor your worker's health. The report should not contain details of medical conditions provided to or diagnosed by the health monitoring doctor if these are not relevant to your worker's job. If your worker has a pre-existing medical condition that may worsen the health effects of exposure to the hazardous chemicals at your workplace, the health monitoring doctor may bring this to your attention so you can put in place effective control measures. However, the health monitoring doctor will only share the details of pre-existing medical conditions if worker gives written permission to do so.

The health monitoring doctor should not include detailed results in section one of the health monitoring report. However, they should include a recommendation based on the results, for example biological exposure testing that shows early indication or diagnosis of injury, illness or disease related to the work that requires health monitoring, or other interpretation of X-ray or spirometry readings that lead to recommending you review workplace controls. If they include detailed health information about your worker in section one that is not required to be in the report, or information on your worker's pre-existing medical conditions without permission, you should return the report marked as confidential to the health monitoring doctor, informing them of the error.

You will find more information on what is in a health monitoring report in *Health monitoring guides for hazardous chemicals* and the *Health monitoring guide for registered medical practitioners*.

Actioning a health monitoring report

Once the health monitoring doctor gives you the health monitoring report, you should consider the results, recommendations and advice provided.

As soon as practicable, you must provide a copy of the report to:

- your worker
- all other PCBUs who have a duty to provide health monitoring for your worker, and

- under certain circumstances, the WHS regulator.

The health monitoring doctor will provide recommendations in the health monitoring report about the health monitoring program for your worker that could include:

- whether it is a final health monitoring report
- details for a repeat appointment, for example:
 - a follow up assessment to confirm results, or
 - the next routine health monitoring appointment
- any counselling required
- an extra medical examination, or
- that your worker has been referred to a medical specialist.

The health monitoring doctor will also provide specific recommendations to you based on your worker's health monitoring results that may include:

- your worker is fit for work with the hazardous chemical
- your worker is fit to resume work with the hazardous chemical
- biological monitoring results show unacceptably high exposure levels
- if you should review workplace control measures, and
- that your worker should be removed from work with the hazardous chemical.

Recommendations about a health monitoring program

You must consult with your worker and explain any recommended remedial measures you must take, for example removing them from work where they have been exposed. You should also consult your worker if you need to further monitor their health. Only your worker and the health monitoring doctor should discuss treatment.

Recommendations a doctor may give you

Removal of your worker from work with a hazardous chemical

If the health monitoring doctor recommends that you remove your worker from work, you should remove them from work with the hazardous chemical that triggered the need for health monitoring. For example, you should give your worker other work or another location where they won't be exposed to the hazardous chemical. You should do this after consulting with your worker and the health monitoring doctor and ensure that your worker is not returned to work with the hazardous chemical until cleared to do so by the health monitoring doctor.

You should continue to provide workers who have been removed from work or transferred to other work with information about their health monitoring.

Lead

The health monitoring doctor will make recommendations in the health monitoring report if you should remove a worker from lead risk work.

You must remove a worker from lead risk work if recommended by the health monitoring doctor if:

- the biological monitoring of your worker shows your worker's blood lead level is at or more than the blood lead removal level for that person:
 - for females not of reproductive capacity and males – 30 µg/dL (1.45 µmol/L)

- for females of reproductive capacity – 10 µg/dL (0.48 µmol/L), or
- there is an indication a risk control measure has failed and, as a result, your worker's blood lead level is likely to reach the relevant level for removal, as per the levels noted above.

A health monitoring doctor may also recommend you remove the worker from lead risk work if their blood lead level is still below the mandatory level but there is an indication your worker has health effects from exposure. If this recommendation is made you should remove your worker from lead risk work.

You must notify the WHS regulator as soon as possible if you remove a worker from carrying out lead risk work. You must arrange for your worker to be medically examined by a health monitoring doctor within seven days after the day your worker is removed.

If you expect your worker to return to carrying out lead risk work, you must monitor their health as often as the health monitoring doctor recommends. This will determine whether your worker's blood lead level is low enough for your worker to return to carrying out lead risk work.

You must ensure your worker does not return to carrying out lead risk work until:

- your worker's blood lead level is less than:
 - for females not of reproductive capacity and males – 20 µg/dL (0.97 µmol/L), or
 - for females of reproductive capacity – 5 µg/dL (0.24 µmol/L), and
- the health monitoring doctor is satisfied your worker is fit to return to carrying out lead risk work.

Review control measures in the workplace

You should, and in some cases must review, and revise if necessary, the control measures in the workplace. The health monitoring doctor will make this recommendation:

- if test results show your worker has been exposed and has elevated levels of metabolites, or break-down products, of a hazardous chemical in their body
- in the case of lead, if test results show your worker has reached or exceeded the relevant blood lead removal level, or if they have otherwise been removed from carrying out lead risk work, or
- if test results show your worker may have contracted a disease, injury or illness as a result of working with the chemical that triggered health monitoring.

The health monitoring doctor may also recommend you take other actions including if your worker can continue to work with hazardous chemicals.

You should examine your work practices and procedures to see if tasks are being done correctly and if controls are not effective or being bypassed. If necessary, you should review and revise worker training programs.

You must regularly review and revise the control measures you have in place for hazardous chemicals. You will find more information on review of control measures in model Code of Practice: *Managing risks of hazardous chemicals in the workplace*.

Provide a copy of the health monitoring report to the WHS regulator

You must provide a copy of the health monitoring report to the WHS regulator if:

- the test results show your worker may have contracted an injury, illness or disease as a result of working with a chemical that triggered health monitoring
- the health monitoring doctor recommends you take remedial measures, including whether your worker can continue to carry out work or a review of control measures, or

- for lead risk work, the test results show your worker has reached a blood lead level at or above the relevant removal level.

Record keeping for health monitoring reports

You must identify workers' health monitoring reports as a record for that worker. You must store these records confidentially and keep them separate from other information, for example records of non-health monitoring examinations.

Confidentiality

You must keep health monitoring reports as confidential records and must not disclose them to another person without your worker's written consent, except where you must provide the records under a law. For example, the model WHS Regulations require disclosure to any of the following:

- the WHS regulator
- another PCBU who has a duty to monitor the health of your worker, and
- a person who must keep the record confidential under a duty of professional confidentiality, for example another doctor.

You must keep health monitoring reports separate from normal workers' records like payroll or human resources data, to prevent unauthorised people from seeing them.

To ensure you meet your confidentiality obligations, you must not use the health monitoring report for any purpose other than monitoring the health of your worker. Similarly, you must not use blood or tissue samples, X-rays, questionnaires or other materials taken for health monitoring for any other purpose.

How long must you keep the record?

You must keep workers' health monitoring records for hazardous chemicals and lead for at least 30 years after the record is made, even if the worker no longer works at your workplace.

You must keep asbestos health monitoring records for at least 40 years, even if the worker no longer works at your workplace, due to the long period of time it can take for asbestos-related disorders to develop.

Further information

You will find further information on health monitoring requirements including information on individual scheduled chemicals, on the Safe Work Australia website:

Health monitoring guide for workers

Health monitoring guide for registered medical practitioners, and

Health monitoring guides for hazardous chemicals.

You may also find further information from the [WHS regulator](#) in your jurisdiction.

Appendix A – Health monitoring for hazardous chemicals

Hazardous chemicals requiring health monitoring

The information in this appendix is taken from regulation 436 (asbestos) and Schedule 14 to the model WHS Regulations.

Table 3 Hazardous chemicals requiring health monitoring under the model WHS Regulations

Hazardous chemical	Type of health monitoring
Acrylonitrile	Demographic, medical and occupational history Records of personal exposure Physical examination
Arsenic (inorganic)	Demographic, medical and occupational history Records of personal exposure Physical examination with emphasis on the peripheral nervous system and skin Urinary inorganic arsenic
Asbestos	Demographic, medical and occupational history Records of personal exposure Physical examination
Benzene	Demographic, medical and occupational history Records of personal exposure Physical examination Baseline blood sample for haematological profile
Cadmium	Demographic, medical and occupational history Records of personal exposure Physical examination with emphasis on the respiratory system Standard respiratory questionnaire to be completed Standard respiratory function tests including, for example, FEV1, FVC and FEV1/FVC Urinary cadmium and β 2-microglobulin Health advice including counselling on the effect of smoking on cadmium exposure

Hazardous chemical	Type of health monitoring
Chromium (inorganic)	<p>Demographic, medical and occupational history</p> <p>Physical examination with emphasis on the respiratory system and skin</p> <p>Weekly skin inspection of hands and forearms by a competent person</p>
Creosote	<p>Demographic, medical and occupational history</p> <p>Health advice including recognising photosensitivity and skin changes</p> <p>Physical examination with emphasis on the neurological system and skin, noting abnormal lesions and evidence of skin sensitisation</p> <p>Records of personal exposure including photosensitivity</p>
Isocyanates	<p>Demographic, medical and occupational history</p> <p>Completing a standardised respiratory questionnaire</p> <p>Physical examination of the respiratory system and skin</p> <p>Standardised respiratory function tests, FEV1, FVC and FEV1/FVC</p>
Lead (inorganic)	<p>Demographic, medical and occupational history</p> <p>Physical examination</p> <p>Biological monitoring (blood lead level)</p>
Mercury (inorganic)	<p>Demographic, medical and occupational history</p> <p>Physical examination with emphasis on dermatological, gastrointestinal, neurological and renal systems</p> <p>Urinary inorganic mercury</p>
4,4'-Methylene bis(2-chloroaniline) (MOCA)	<p>Demographic, medical and occupational history</p> <p>Physical examination</p> <p>Urinary total MOCA</p> <p>Dipstick analysis of urine for haematuria</p> <p>Urine cytology</p>

Hazardous chemical	Type of health monitoring
Organophosphate pesticides	<p>Demographic, medical and occupational history including pattern of use</p> <p>Physical examination</p> <p>Baseline estimation of red cell and plasma cholinesterase activity levels by the Ellman or equivalent method</p> <p>Estimating red cell and plasma cholinesterase activity towards the end of the working day on which organophosphate pesticides have been used</p>
Pentachlorophenol (PCP)	<p>Demographic, medical and occupational history</p> <p>Records of personal exposure</p> <p>Physical examination with emphasis on the skin, noting abnormal lesions or effects of irritancy</p> <p>Urinary total pentachlorophenol</p> <p>Dipstick urinalysis for haematuria and proteinuria</p>
Polycyclic aromatic hydrocarbons (PAH)	<p>Demographic, medical and occupational history</p> <p>Physical examination</p> <p>Records of personal exposure including photosensitivity</p> <p>Health advice including recognising photosensitivity and skin changes</p>
Silica, crystalline	<p>Demographic, medical and occupational history</p> <p>Records of personal exposure</p> <p>Standardised respiratory questionnaire to be completed</p> <p>Standardised respiratory function test, for example, FEV1, FVC and FEV1/FVC</p> <p>Chest X-Ray full PA view</p>
Thallium	<p>Demographic, medical and occupational history</p> <p>Physical examination</p> <p>Urinary thallium</p>
Vinyl chloride	<p>Demographic, medical and occupational history</p> <p>Physical examination</p> <p>Records of personal exposure</p>

Examples of chemicals to consider for health monitoring

You may wish to consider the following examples of hazardous chemicals and their testing methods, which are not listed in Schedule 14 to the model WHS Regulations, when implementing a health monitoring program for your workers.

Table 4 Some hazardous chemicals to consider for health monitoring

Hazardous chemical	Type of health monitoring
1. Antimony	Demographic, medical and occupational history Records of personal exposure Physical examination with emphasis on the respiratory system and skin Urinary antimony level
Arsenic (inorganic)	Extra: Urinary inorganic arsenic by speciation (inorganic arsenic plus methylated metabolites)
Benzene	Extra: Urinary S-phenylmercapturic acid (s-PMA)
Beryllium	Demographic, medical and occupational history Records of personal exposure Physical examination with emphasis on respiratory and dermatological systems Urinary beryllium level
Butanone (methyl ethyl ketone, MEK)	Demographic, medical and occupational history Physical examination with emphasis on the central nervous system and skin Urinary MEK (2-butanone) level
Carbon disulfide	Demographic, medical and occupational history Physical examination with emphasis on the respiratory system and skin Urinary 2-thiothiazolidine-4-carboxylic acid level
Chromium (inorganic)	Extra: Urinary chromium

Hazardous chemical	Type of health monitoring
Cobalt	Demographic, medical and occupational history Physical examination with emphasis on respiratory systems and skin Urinary cobalt level
Creosote	Extra: Urinary 1-hydroxypyrene
Cyclophosphamide	Demographic, medical and occupational history Urinary cyclophosphamide level
Dichloromethane	Collecting demographic, medical and occupational history Physical examination with emphasis on the central nervous system Urinary dichloromethane
Ethyl benzene	Demographic, medical and occupational history Records of personal exposure Physical examination Baseline blood sample for haematological profile Urinary mandelic acid level
Fluorides (including soluble fluorides and aluminium fluoride)	Demographic, medical and occupational history Physical examination with emphasis on the respiratory system Pre and post shift urinary fluoride level
Isocyanates	Extra: Urinary isocyanate metabolites
4-methylpentan-2-one (methyl isobutyl ketone) MIBK	Demographic, medical and occupational history Physical examination with emphasis on the respiratory system and skin Urinary MIBK level
Nickel	Demographic, medical and occupational history Physical examination with emphasis on dermatological and respiratory systems Urinary nickel level

Hazardous chemical	Type of health monitoring
Organophosphate pesticides	Extra: Urinary organophosphate metabolites
Polycyclic aromatic hydrocarbons (PAH)	Extra: Urinary 1-hydroxypyrene
Styrene	Demographic, medical and occupational history Records of personal exposure Physical examination Baseline blood sample for haematological profile Urinary mandelic acid
Tetrachloroethylene (perchloroethylene)	Demographic, medical and occupational history Physical examination with emphasis on the central nervous, respiratory and reproductive systems and skin Tetrachloroethylene blood level before shift
Toluene	Demographic, medical and occupational history Records of personal exposure Physical examination Baseline blood sample for haematological profile Urinary o-cresol
Trichloroethylene	Demographic, medical and occupational history Physical examination with emphasis on the central nervous system Urinary trichloroacetic acid or trichloroethane level
Vinyl chloride	Extra: Annual liver function tests (AST, ALT, GGT, ALP, and bilirubin)
Uranium	Demographic, medical and occupational history Physical examination Post shift urinary uranium level Urinary dipstick analysis for proteinuria Urinary cytology

Hazardous chemical**Type of health monitoring**

Xylene

Demographic, medical and occupational history
Records of personal exposure
Physical examination
Baseline blood sample for haematological profile
Urinary toluric acid

Appendix B – Checklist for providing health monitoring

Table 5 Checklist for providing health monitoring

Actions			
<input type="checkbox"/>	Inform your worker or potential worker of health monitoring requirements before your worker carries out work with the hazardous chemical.		
<input type="checkbox"/>	Provide your worker with a copy of <i>Health Monitoring guide for workers</i> .		
<input type="checkbox"/>	Engage a registered medical practitioner with experience in health monitoring to carry out or supervise the health monitoring program.		
<input type="checkbox"/>	Provide the registered medical practitioner with information about the work and the work environment, hazardous chemicals your worker may be exposed to and control measures as described in this guide.		
<input type="checkbox"/>	In consultation with the registered medical practitioner, decide on the type and frequency of health monitoring while considering the hazardous chemicals being used and regulatory requirements in the WHS Regulations.		
<input type="checkbox"/>	Check in with the registered medical practitioner to ensure they have conducted or supervised the health monitoring program		
<input type="checkbox"/>	Get a copy of section one of the health monitoring report and: <ul style="list-style-type: none"> • identify the record as a confidential record about your worker, and • keep the record at least 30 years after the record is made or 40 years for work with asbestos. 		
<input type="checkbox"/>	Provide a copy of section one of the health monitoring report to: <ul style="list-style-type: none"> • your worker • other PCBU's who have a duty to provide health monitoring for your worker, and • where indicated, to the regulator. 		
<input type="checkbox"/>	Inform your worker about the outcomes of the health monitoring including who has a copy.		
Take action where the health monitoring report has the following:			
<input type="checkbox"/>	<table border="0"> <tr> <td style="vertical-align: top;">The worker is fit for work with the hazardous chemical</td> <td style="vertical-align: top;"> No specific action. The worker can start or continue with work with the hazardous chemical. </td> </tr> </table>	The worker is fit for work with the hazardous chemical	No specific action. The worker can start or continue with work with the hazardous chemical.
The worker is fit for work with the hazardous chemical	No specific action. The worker can start or continue with work with the hazardous chemical.		

Actions

- The worker is fit to resume work with the hazardous chemical

If your worker had been removed from work with a specific hazardous chemical, your worker is now considered medically fit to work with the hazardous chemical.

The worker can resume work with the hazardous chemical.

- Biological monitoring results show unacceptable exposure levels

Review control measures.

For lead risk work, give a copy of the report to the regulator and remove your worker from lead risk work.

- Review workplace control measures

Give a copy of the report to the regulator.

Review control measures.

- Remove your worker from work with the hazardous chemical

Give a copy of the report to the regulator.

Review control measures.

Remove your worker from work with that specific hazardous chemical
