safe work australia

Health monitoring

Guide for lead (inorganic)

safe work australia

Contents

Introduction

This guide is intended to be read by a registered medical practitioner with experience in health monitoring who is engaged by person conducting a business or undertaking (PCBU) to carry out or supervise health monitoring. It provides practical guidance to registered medical practitioners about requirements under the work health and safety (WHS) laws for health monitoring.

This guide applies to all workplaces covered by the WHS Regulations where health monitoring is required.

How to use this guide

This guide includes references to the legal requirements under the WHS Act and WHS Regulations. These are included for convenience only and should not be relied on in place of the full text of the WHS Act or WHS Regulations.

The words ‘must’, ‘requires’ or ‘mandatory’ indicate a legal requirement exists that must be complied with. The word ‘should’ is used in this guide to indicate a recommended course of action, while ‘may’ is used to indicate an optional course of action.

This guide provides information for those registered medical practitioners engaged by a PCBU to carry out or supervise health monitoring for workers. This guidance should be read in conjunction with the following:

- *Health monitoring guide for registered medical practitioners*
- *Health monitoring guides for hazardous chemicals*
- *Health monitoring guide for workers*
- *Health monitoring guide for persons conducting business or undertakings (PCBUs).*

Health monitoring under the WHS Regulations

In certain circumstances, the model WHS Regulations place duties on a PCBU to provide health monitoring to workers. These requirements arise if the worker is carrying out work with hazardous chemicals including lead and asbestos. In addition, the work being carried out must be the kind of work specified in the WHS Regulations. A PCBU has the duty to determine if health monitoring is required.

The WHS Regulations prescribe that health monitoring is carried out by or supervised by a registered medical practitioner with experience in health monitoring.

Lead (inorganic)

Lead (CAS 7439-92-1) is a soft, metallic, blue-grey heavy metal.

In the workplace, lead may be encountered as a dust or fume in a pure, oxide or salt form.

Amendments for controlling lead in the workplace

In April 2018 the model Work Health and Safety (WHS) Regulations were amended to reduce the threshold for:

- lead risk work
- the frequency of blood lead level testing
- blood lead removal levels
- return to work blood lead levels, and
- the workplace exposure standard for inorganic lead (dusts and fumes).

These amendments have a two year transitional period. You should check with your state or territory regulator to confirm the relevant dates for this transitional period.

Work activities that may represent a high risk exposure

Under the WHS Regulations, lead and lead compounds are listed as restricted hazardous chemicals and must not be used for abrasive blasting at a concentration of greater than 0.1 per cent (Pb) without authorisation from a relevant WHS regulator, or be used where the operator would be exposed to levels in excess to those outlined in the WHS Regulations.

Lead and lead compounds are found in solders, metal alloys, bronzes and construction material; are used as shielding for γ- or X-radiation (from X-rays); and have previously been used in paints. Lead may still be found in paint or painted products sourced from overseas.

The following are examples of lead processes:

- work that exposes a person to lead dust or lead fumes arising from the manufacture or handling of dry lead compounds
- work in connection with the manufacture, assembly, handling or repair of, or parts of, batteries containing lead that involves the manipulation of dry lead compounds, or pasting or casting lead
- breaking up or dismantling batteries containing lead, or sorting, packing and handling plates or other parts containing lead that are removed or recovered from the batteries
- spraying molten lead metal or alloys containing more than five per cent by weight of lead metal
- melting or casting lead alloys containing more than five per cent by weight of lead metal where the temperature of the molten material exceeds 450°C
- recovering lead from its ores, oxides or other compounds by thermal reduction process
- dry machine grinding, discing, buffing or cutting by power tools alloys containing more than five per cent by weight of lead metal
- machine sanding or buffing surfaces coated with paint containing more than one per cent by dry weight of lead
- a process where electric arc, oxyacetylene, oxy gas, plasma arc or a flame is applied for welding, cutting or cleaning, to the surface of metal coated with lead or paint containing more than one per cent by dry weight of lead metal
- radiator repairs that may cause exposure to lead dust or lead fumes

- fire assays if lead, lead compounds or lead alloys are used
- hand grinding and finishing lead or alloys containing more than 50 per cent by dry weight of lead
- spray painting with lead paint containing more than one per cent by dry weight of lead
- melting lead metal or alloys containing more than 50 per cent by weight of lead metal if the exposed surface area of the molten material exceeds 0.1 square metre and the temperature of the molten material does not exceed 450°C
- using a power tool, including abrasive blasting and high pressure water jets, to remove a surface coated with paint containing more than one per cent by dry weight of lead and handling waste containing lead resulting from the removal
- a process that exposes a person to lead dust or lead fumes arising from manufacturing or testing detonators or other explosives that contain lead
- a process that exposes a person to lead dust or lead fumes arising from firing weapons at an indoor firing range
- foundry processes involving:
    - melting or casting lead alloys containing more than one per cent by weight of lead metal where the temperature of the molten material exceeds 450°C, or
    - dry machine grinding, discing, buffing or cutting by power tools lead alloys containing more than one per cent by weight of lead metal, and
- a process decided by the regulator to be a lead process under regulation 393 (WHS Regulations).

Sources of non-occupational exposure

Exposure to lead can occur in areas with high environmental contamination. Exposure may also occur through hobbies including shooting and fishing.

1. Health monitoring for inorganic lead under the WHS Regulations

Collection of demographic, medical and occupational history

Physical examination

Biological monitoring

Health monitoring before starting work in an inorganic lead process

Under the WHS Regulations, a '*lead process'* has a specific definition and encompasses specific activities.

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

- 5 µg/dL (0.24 µmol/L) for females of reproductive capacity, and
- 20 µg/dL (0.97 µmol/L) for all other workers.

Baseline health monitoring of lead risk workers is required:

- before the worker first starts lead risk work, with
- a blood lead level repeated one month after the worker starts lead risk work.

If work is identified as lead risk work after a worker starts, the person conducting a business or undertaking has a duty to ensure health monitoring of the worker is provided:

- as soon as practicable after the lead risk work is identified, with

- a blood lead level repeated one month after the first monitoring of the worker.

The following details about the worker's medical history should be collected by the registered medical practitioner:

- history of medical conditions and systematic enquiry for the presence of symptoms with an emphasis on reproductive history including current pregnancy or breastfeeding, neuropsychological problems, haematological disorders and renal disorders
- prior history of non-work-related lead exposure e.g. hobbies like shooting (exposure to gunshot residue or preparation of ammunition using lead primers) and fishing (exposure to lead sinkers)
- history of medication (including alternative supplements) or medical treatment including recent chelating agent therapy (e.g. EDTA), and
- smoking history.

Assessment of pulmonary status may be required in cases where respiratory protective equipment is or is likely to be needed. Workers should be counselled that respirator fit can be poor and protection ineffective if they have a beard or facial hair.

Where indicated, the following tests may be carried out to assess the worker's baseline fitness for lead risk work:

- blood lead level
- full blood examination
- serum creatinine
- routine urinalysis, and
- pulmonary function testing in cases where exposure may be via airborne lead fume or dusts or where respiratory protection is required.

The registered medical practitioner supervising the health monitoring should take into consideration whether medical counselling is required for the worker. If medical counselling is required, the level of counselling and recommended timeframe and level of urgency should be recorded in the health monitoring report.

Counselling for lead risk work should include the following health and personal hygiene advice.

Health effects of lead

Workers should be informed of the potential health effects associated with exposure to inorganic lead including the different risks to men and women and people of younger age (i.e. less than18 years of age).

Workers should be informed of the bioaccumulation of lead and be advised to minimise exposure particularly for long term lead risk work.

Family planning

Workers who consider they have not completed their family should be counselled on the health effects of lead on male and female reproduction, as appropriate.

Female workers working in lead risk jobs should be informed exposure to lead during pregnancy may be associated with pregnancy complications and may pose a risk to the development of the foetus. Female workers should be counselled on the effects of lead on foetal and childhood development, in particular cognitive development.

Females of reproductive capacity should be informed about the reproductive health risks where blood lead levels may exceed 10 µg/dL (0.48 µmol/L). It is highly recommended that in order to give maximum protection to the foetus, women who are planning a pregnancy

should endeavour to limit lead exposure to a blood lead level well below 5 µg/dL (0.24 µmol/L) for a period of at least a year prior to pregnancy.

Male workers should be informed that exposure to lead may adversely affect reproductive function.

Pregnancy and breastfeeding

Workers who are pregnant or breastfeeding should be advised to seek alternative duties (that do not involve lead exposure) from the person conducting the business or undertaking (PCBU).

Infants are more susceptible to the health effects of lead than adults. A breastfeeding worker should keep her blood lead level as low as possible.

Medical conditions

Individuals with certain medical conditions, for example impaired renal function and anaemia, haemoglobinopathies, neuropathies and reproductive problems may be more susceptible to additive health effects from lead.

Personal hygiene

Workers should be encouraged to use washing or showering facilities at the workplace, and change clothes prior to going home to minimise secondary lead exposure from contaminated clothing and minimise ingestion of lead.

Workers who smoke or bite their nails should be counselled on the risk of lead ingestion.

Eating, drinking and smoking

Workers should be reminded:

1. they are not permitted to smoke, carry materials used for smoking, eat, chew gum or drink in a lead process area
2. of the importance of removing lead contaminated clothing and equipment, and
3. to wash their hands and faces, before entering areas designated for eating and drinking.

A full explanation of the reasons for these restrictions and the benefits to be gained by compliance should be given.

Those workers with smoking history should be counselled on the possible additional lead burden from smoking.

During exposure to an inorganic lead process

2. Monitoring exposure to inorganic lead

Exposure to inorganic lead can be measured by blood lead level testing.

Testing must be arranged for each worker who carries out lead risk work at the following times:

For females not of reproductive capacity and males:

- six months after the last biological monitoring of the worker if the last monitoring shows a blood lead level of less than 10 µg/dL (0.48 µmol/L), or
- three months after the last biological monitoring of the worker if the last monitoring shows a blood lead level of 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 the 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 the 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 the worker if the last monitoring shows a blood lead level of greater than or equal to 5 µg/dL (0.24 µmol/L) but less than 10 µg/dL (0.48 µmol/L).

The frequency of biological monitoring should be increased if the worker carries out an activity that is likely to significantly change the nature or increase the duration or frequency of the worker's lead exposure.

If it is confirmed that lead blood levels exceed 10 µg/dL (0.48 µmol/L) for female workers of reproductive capacity or 30 µg/dL (1.44 µmol/L) for other workers, the worker must be removed from lead risk work and the workplace practices and controls should be immediately reviewed as this indicates current controls are not performing effectively.

Other health monitoring methods

The distribution and clearance of absorbed inorganic lead is such that urine lead levels are not considered a suitable indicator of inorganic lead exposure.

Lead inhibits the mitochondrial enzyme, ferrochelatase, and delta-aminolaevulinic acid dehydratase (ALAD); both are involved in haem synthesis. This inhibition results in the accumulation of protoporphyrin in red blood cells, which chelates with zinc instead of iron to form zinc protoporphyrin (ZPP), also resulting in increased urinary excretion of coproporphyrin.

Blood ZPP levels have been used as a measure of lead exposure to differentiate between recent exposure and chronic accumulation. As ZPP remains in erythrocytes for the average lifespan of the red blood cell, the blood ZPP level reflects averaged exposure over a three-month period. There is a wide range of inter-individual variability in the protoporphyrin response to lead absorption and it is suggested results are compared with previous results from the same individual with monitoring of the individual response rather than interpretation of a particular level. The protoporphyrin response lags behind the current blood lead level by two to three months as an increase only becomes measurable in the peripheral blood as affected erythrocytes mature and are released from the bone marrow. It is recommended testing for ZPP as a measure of lead exposure only be considered once removal limits have been reached. As with blood lead levels, continued exclusion from lead work is recommended until levels return to satisfactory levels.

There can be limitations of this method compared with measurement of blood lead levels:

- low sensitivity and potential false negatives, and
- lower specificity – ZPP levels can be influenced by conditions other than exposure to lead.

Workplace exposure standard

The workplace exposure standard for dusts and fumes of inorganic lead is:

- eight hour time weighted average (TWA) of 0.05 mg/m^3.

An exposure standard of 0.05 mg/m^3 is estimated to result in an average blood lead level of approximately 23 µg/dL, with an upper bound of 46 µg/dL if the primary route of exposure is via inhalation.

It should be noted that these estimated blood levels are high compared with the blood lead levels triggering biological monitoring and blood lead levels triggering removal of a worker,

particularly a female worker of reproductive capacity, from lead risk work. Therefore, all reasonably practicable steps must be taken by the PCBU to eliminate or minimise lead exposure to a level well below the workplace exposure standard. Also, workers should wear appropriate personal protective equipment to further minimise exposure.

A physical examination with an emphasis on the gastrointestinal, haematopoietic, renal, cardiovascular, reproductive and neurological systems may be indicated if the results of air monitoring indicate frequent or potentially high exposure.

NOTE: Lead can be ingested via hand-to-mouth actions and air monitoring results may not be a true indication of exposure. In these instances surface wipe testing may be used as an alternative.

Removal of a worker from a lead risk work

Where a medical examination indicates the worker is displaying adverse symptoms of exposure to lead or where results of biological monitoring exceed the biological exposure standard, the worker must be removed from lead risk work.

A worker must be immediately removed from carrying out lead risk work if:

a) biological monitoring of the worker shows that the worker's blood lead level is:
    - greater than or equal to 30 µg/dL (1.44 µmol/L) for females not of reproductive capacity and males, and
    - greater than or equal to 10 µg/dL (0.48 µmol/L) for females of reproductive capacity, or

b) there is an indication that a risk control measure has failed and as a result, the worker's blood lead level is likely to reach the relevant level for the worker outlined above.

If a worker's blood lead level is above the removal level, the Health Monitoring Report should advise immediate removal from lead risk work.

A second medical examination must be carried out within seven days after the day the worker is removed from lead risk work.

In certain jurisdictions (e.g. Western Australia) it is mandatory for pregnant or breastfeeding workers to be removed from lead risk work.

Return to work

A worker must not return to lead risk work until the worker's blood lead level is:

- less than 20 µg/dL (0.97 µmol/L) for females not of reproductive capacity and males, or
- less than 5 µg/dL (0.24 µmol/L) for females of reproductive capacity
- they have been assessed as medically fit to return to lead risk work by the registered medical practitioner supervising the health monitoring, and
- a recommendation to the person conducting the business or undertaking (PCBU) that the worker can return to remediated lead risk work has been made by the registered medical practitioner.

The frequency of repeat blood lead level tests after removal from lead risk work is at the discretion of the registered medical practitioner supervising the health monitoring, but should be done at least every three to six weeks until the appropriate fall in blood lead levels has occurred.

The worker should be examined periodically to determine whether the worker is suitable to return to carrying out lead risk work.

At termination of lead risk work

3. Final medical examination

A final medical examination should be carried out to determine whether the worker has adverse health effects due to exposure to inorganic lead.

Workers with health conditions or continuing symptoms due to lead exposure should be advised to seek continuing medical examinations as organised by the registered medical practitioner supervising the health monitoring program.

A health monitoring report from the registered medical practitioner should be provided to the PCBU as soon as practicable after the completion of the monitoring program, and at regular intervals for longer term or ongoing health monitoring processes. The report must include:

- the name and date of birth of the worker
- the name and registration number of the registered medical practitioner
- the name and address of the PCBU who commissioned the health monitoring
- the date of the health monitoring
- if a blood sample is taken – the date the blood sample is taken
- the results of biological monitoring that indicate blood lead levels in the worker's body
- the name of the pathology service used to carry out tests
- any test results that indicate the worker has reached or exceeded the relevant blood lead level for that worker under WHS regulation 415 (10 µg/dL for females of reproductive capacity and 30 µg/dL for all other workers)
- any advice that test results indicate that the worker may have contracted an injury, illness or disease as a result of carrying out the work that triggered the requirement for health monitoring
- any recommendation that the PCBU take remedial measures, including whether the worker can continue to carry out the type of work that triggered the requirement for health monitoring, and
- whether medical counselling is required for the worker in relation to the work that triggered the requirement for health monitoring.

Potential health effects following exposure to inorganic lead

4. Route of occupational exposure

The primary route of exposure to lead can be either via inhalation or accidental ingestion through hand-to-mouth actions. Not only are particulates in air, like dusts and fumes, important sources of exposure via inhalation in the workplace, but accidental ingestion may be possible when eating or smoking with contaminated hands.

The respiratory tract provides the most efficient route of absorption. In adult men, approximately 30 to 50 per cent of lead in inhaled air is deposited in the respiratory tract. The extent of gastrointestinal absorption is variable (from less than 10 per cent to greater than 90 per cent), depending on physiological conditions, age, fasting, the presence of other elements and fats in the diet, and the solubility of the lead species.

5. Target organ/effect

One of the main targets of inorganic lead toxicity in adults is the nervous system – central and peripheral. Severe exposures may cause encephalopathy and progressive degeneration of certain parts of the brain, coma or death.

Chronic high level workplace exposure to lead damages the peripheral nervous system, resulting in local paralysis, or 'lead palsy'. Workers with lower levels of exposure may experience fatigue, irritability, depression, insomnia, headaches and subtle evidence of intellectual decline.

Exposure to inorganic lead may also damage the formation and functioning of red blood cells. Anaemia is one of the most characteristic symptoms of high level chronic lead exposure.

Low to moderate exposure may result in cardiovascular effects, including increased blood pressure and electrocardiographic abnormalities.

Once in the body, lead is transported in the bloodstream, entering all body tissues. Only two to five per cent of the total body lead is found in red blood cells. Approximately 94 per cent of the total body burden of lead is in the bones for adults. Lead is preferentially stored in the skeleton and in regions undergoing the most active calcification at the time of exposure – both cortical and trabecular bone.

Distribution of lead to various organs is variable as are elimination rates. Blood lead clearance after an exposure change is approximately 20 to 35 days, while red blood cells have a half-life of 120 days. Redistribution from bone is much slower and takes approximately three to 30 years. Due to the slow clearance rate from the body, lead can accumulate in various organs, including the bones.

Body recovery is slower each time exposure occurs and body burden continues to accumulate with repeated exposure. Clinical treatment using chelation therapy to reduce lead levels may decrease total lead body burden but not the risk of cognitive effects.

Lead affects people of all ages, but the effects of lead are considered most serious in young children.

6. Observed health effects and blood lead levels

The adverse health effects of lead have been well documented over the years in both occupational and non-occupational studies. A summary of health effects from occupational studies and their associated blood lead levels can be found in Figure 1 below.

Research in non-occupational settings has indicated:

- increased risk of spontaneous abortion and potential for postnatal developmental delay at maternal blood lead levels ≥ 5 µg/dL
- hypertension and kidney dysfunction at blood lead levels ≥ 5 µg/dL
- reduced birth weight and potential for subclinical neurocognitive deficits at maternal blood lead levels ≥ 10 µg/dL
- increased non-specific symptoms at blood lead levels ≥ 30 µg/dL
- neurocognitive effects, sperm abnormalities nephropathy, anaemia, colic, gout at blood lead levels ≥ 40 µg/dL, and
- encephalopathy and peripheral neuropathy at blood lead levels ≥ 80 µg/dL.

Medical conditions that may be exacerbated with continued exposure to lead include chronic renal dysfunction, hypertension, neurological disorders, and cognitive dysfunction.

Non-specific symptoms may include headache, fatigue, sleep disturbance, anorexia, constipation, arthralgia, myalgia, and decreased libido.

Chelation therapy should be considered based on the severity of adverse health effects from 40 µg/dL.

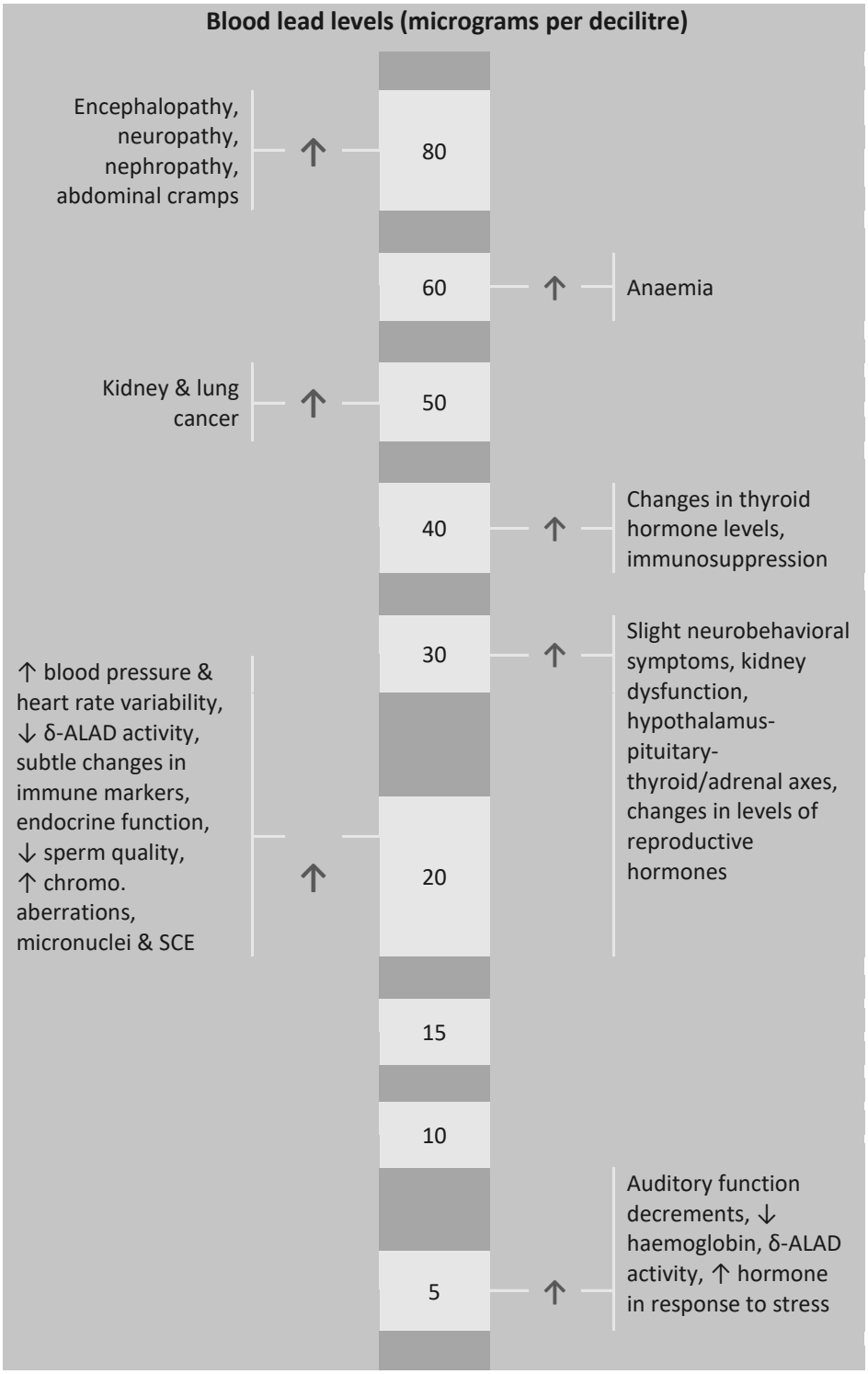

Figure 1 Blood lead response in adults from occupational epidemiology studies
Upward arrows indicate the lowest blood lead level where the health effects were reported in individuals in various studies. Blood lead levels where people exhibit symptoms vary greatly between individuals. It is possible for people with blood lead levels of 40 µg/dL or more not to exhibit noticeable health effects.

7. Carcinogenicity

Most lead compounds have been classified as Category 2 carcinogens according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) as they are suspected of causing cancer in humans. However, lead chromate and lead hydrogen arsenate have been classified as Category 1B and Category 1A, respectively, carcinogens as they are presumed or have shown to cause cancer in humans. For further information on specific lead compounds, refer to Safe Work Australia's Hazardous Chemical Information system or the relevant safety data sheet.

8. GHS classification

Different lead compounds may have different health hazard classifications. The specific lead compound to which a worker is exposed will need to be reviewed to ensure appropriate identification of the health hazards. For the GHS classification of a specific lead compound, refer to Safe Work Australia's Hazardous Chemical Information System or the relevant safety data sheet for detailed information.

Source documents

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Australian Institute of Occupational Hygienists Position Paper (2009) *Inorganic Lead and Occupational Health Issues*.

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Safe Work Australia (2013) *Workplace Exposure Standards for Airborne Contaminants* (PDF 873KB).

Safe Work Australia; *Hazardous Chemicals Information System.*

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Skerfving, S. (2005) *Criteria Document for Swedish Occupational Standards: Inorganic Lead – an update 1991–2004*, The Swedish Group for Occupational Standards, Department of Occupational and Environmental Medicine, Lund, Sweden.

Wooller, K.K. (2003) Occupational Medicine Handbook (Eleventh Edition), Information for WorkCover Authority of NSW Authorised Medical Practitioners.

Health monitoring report

Lead (inorganic)

This form contains confidential information and must not be disclosed to another person except in accordance with the Work Health and Safety Regulations or with consent of the worker

Health monitoring report – Lead (inorganic)

This health monitoring report is a confidential health record and must not be disclosed to another person except in accordance with the Work Health and Safety (WHS) Regulations or with the consent of the worker.

There are two sections. Complete both sections and all questions as applicable.

Section 1 A copy of this section should be forwarded to the person conducting the business or undertaking (PCBU) who has engaged your services.

Section 2 may contain confidential health information. Information that is required to be given to the PCBU should be summarised in Section 1.

Section 1 – A copy of this section to be provided to the PCBU

Person conducting a business or undertaking

Company/organisation name: Click here to enter text.

Site address: Click here to enter text.

Suburb: Click here to enter text. **Postcode:** Click here to enter text.

Site Tel: Click here to enter text. **Site Fax:** Click here to enter text.

Contact Name: Click here to enter text.

Other businesses or undertakings engaging the worker ☐ N/A
(include a separate section for each PCBU)

Company/organisation name: Click here to enter text.

Site address: Click here to enter text.

Suburb: Click here to enter text. **Postcode:** Click here to enter text.

Site Tel: Click here to enter text. **Site Fax:** Click here to enter text.

Contact Name: Click here to enter text.

Worker details (tick all relevant boxes)

Surname: Click here to enter text. **Given names:** Click here to enter text.

Date of birth: Click here to enter a date. **Sex:** ☐ Male ☐ Female

Address: Click here to enter text.

Suburb: Click here to enter text. **Postcode:** Click here to enter text.

Current job: Click here to enter text.

Tel (H): Click here to enter text. **Mob:** Click here to enter text.

Date started employment: Click here to enter a date.

Employment in lead risk work (tick all relevant boxes)
(information be provided by the PCBU)

☐ New to lead work

This form contains confidential information and must not be disclosed to another person except in accordance with the Work Health and Safety Regulations or with consent of the worker

☐ New worker but not new to lead work

☐ Current worker continuing in lead work

Worked with lead since: Click here to enter a date.

Risk assessment completed: ☐ Yes ☐ No

Work environment assessment (tick all relevant boxes) (information provided by the PCBU)

Date of assessment: Click here to enter a date.

Lead industry/use

☐ Fire assay

☐ Lead battery maintenance

☐ Manufacture of lead flux

☐ Manufacture of lead paint

☐ Manufacture of lead sinkers

☐ Monumental work

☐ Firing range

☐ Foundry

☐ Lead burning

☐ Leadlight work

☐ Painting, stripping or cleaning lead paint

☐ Metal recycling

☐ Radiator repair

☐ Other (specify):

Other chemicals the worker may be exposed to: Click here to enter text.

Controls		
Wear gloves	☐ Yes	☐ No
Respirator use	☐ Yes	☐ No
Type of respirator	Click here to enter text.	
Local exhaust ventilation	☐ Yes	☐ No
Overalls/work clothing	☐ Yes	☐ No
Laundering by employer	☐ Yes	☐ No
Wash basins and showers (with hot and cold water)	☐ Yes	☐ No
Dry sweeping	☐ Yes	☐ No
Other please specify		

Health monitoring results

Biological monitoring results

Include/attach test results that indicate whether or not the worker has been exposed

Date	Blood lead levels	Recommended action and/or comment
Click here to enter text.	Click here to enter text.	Click here to enter text.
Click here to enter text.	Click here to enter text.	Click here to enter text.
Click here to enter text.	Click here to enter text.	Click here to enter text.

This form contains confidential information and must not be disclosed to another person except in accordance with the Work Health and Safety Regulations or with consent of the worker

Date	Blood lead levels	Recommended action and/or comment
Click here to enter text.	Click here to enter text.	Click here to enter text.

Details of pathology service: Click here to enter text.

Comments about health monitoring results (for example any early indications or diagnosis of injury, illness or disease): Click here to enter text.

Recommendations (by registered medical practitioner) (tick all relevant boxes)

Further/additional health monitoring for worker

☐ This is the final health monitoring report

☐ Repeat health assessment in Click here to enter text. month(s) / Click here to enter text. week(s)

☐ Counselling required

☐ Medical examination by registered medical practitioner. On Click here to enter a date.

☐ Referred to Medical Specialist (neurologist/haematologist/other). On Click here to enter a date.

Recommendations to PCBU

☐ The worker is suitable for work with lead

☐ Review workplace controls

☐ Removal from work with lead. On Click here to enter a date.

☐ Fit to resume work. On Click here to enter a date.

Specialist's name: Click here to enter text.

Additional comments or recommendations: Click here to enter text.

Registered medical practitioner (responsible for supervising health monitoring)

Name: Click here to enter text.

Signature:

Date: Click here to enter a date.

Tel: Click here to enter text. **Fax:** Click here to enter text.

Registration Number: Click here to enter text.

Medical Practice: Click here to enter text.

Address: Click here to enter text.

Suburb: Click here to enter text. **Postcode:** Click here to enter text.

This form contains confidential information and must not be disclosed to another person except in accordance with the Work Health and Safety Regulations or with consent of the worker

Section 2 – This section to be retained by the registered medical practitioner

Person conducting a business or undertaking

Company/organisation name: Click here to enter text.

Site address: Click here to enter text.

Suburb: Click here to enter text. **Postcode:** Click here to enter text.

Site Tel: Click here to enter text. **Site Fax:** Click here to enter text.

Contact Name: Click here to enter text.

Other businesses or undertakings engaging the worker ☐ N/A
(include a separate section for each PCBU)

Company/organisation name: Click here to enter text.

Site address: Click here to enter text.

Suburb: Click here to enter text. **Postcode:** Click here to enter text.

Site Tel: Click here to enter text. **Site Fax:** Click here to enter text.

Contact Name: Click here to enter text.

Worker details (tick all relevant boxes)

Surname: Click here to enter text. **Given names:** Click here to enter text.

Date of birth: Click here to enter a date.

Sex: ☐ Male ☐ Female ☐ Pregnant/breastfeeding

Address: Click here to enter text.

Suburb: Click here to enter text. **Postcode:** Click here to enter text.

Current job: Click here to enter text.

Tel (H): Click here to enter text. **Mob:** Click here to enter text.

Date started employment: Click here to enter a date.

Type of lead risk work (please specify): Click here to enter text.

Past employment and exposure details (tick all relevant boxes)

Have you ever worked in any of the following jobs?

If you answered 'yes' to any of the questions, please advise if you experienced any symptoms such as cough or wheeze or asthma when working.

			Comments (all 'yes' answers)
Manufacture or handling of dry lead compounds	☐ No	☐ Yes	Click here to enter text.
Manufacture, assembly, handling or repair of, or parts of, batteries	☐ No	☐ Yes	Click here to enter text.

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			Comments (all 'yes' answers)
Breaking up or dismantling batteries containing lead, or handling that are removed or recovered from the batteries	☐ No	☐ Yes	Click here to enter text.
Spraying molten lead metal or alloys	☐ No	☐ Yes	Click here to enter text.
Melting or casting lead alloys	☐ No	☐ Yes	Click here to enter text.
Recovering lead from its ores, oxides or other	☐ No	☐ Yes	Click here to enter text.
Grinding, discing, buffing or cutting by power tools alloys containing lead metal	☐ No	☐ Yes	Click here to enter text.
Machine sanding, buffing surfaces, abrasive blasting and high pressure water blasting of surfaces coated with paint containing lead	☐ No	☐ Yes	Click here to enter text.
Welding, cutting or cleaning the surface of metal coated with lead or lead-containing paint	☐ No	☐ Yes	Click here to enter text.
Radiator repairs	☐ No	☐ Yes	Click here to enter text.
Fire assays if lead, lead compounds or lead alloys are used	☐ No	☐ Yes	Click here to enter text.
Spray painting with lead based paints	☐ No	☐ Yes	Click here to enter text.
Manufacturing or testing detonators or other explosives that contain lead	☐ No	☐ Yes	Click here to enter text.
Firing weapons at an indoor firing range	☐ No	☐ Yes	Click here to enter text.
Foundry processes involving melting or casting lead alloys, or dry machine grinding, discing, buffing or cutting by power tools lead alloys	☐ No	☐ Yes	Click here to enter text.
Other (please specify)	☐ No	☐ Yes	Click here to enter text.

General health questionnaire (tick all relevant boxes)

			Comments (all 'yes' answers)
Did you suffer any incapacity lasting two weeks or longer in the last two years	☐ No	☐ Yes	Click here to enter text.
Have you ever had any operations or accidents or been hospitalised for any reason	☐ No	☐ Yes	Click here to enter text.

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			Comments (all 'yes' answers)
Are you currently being treated by a doctor or other health professional for any illness or injury relating	☐ No	☐ Yes	Click here to enter text.
Are you currently receiving any medical treatment or taking any medications	☐ No	☐ Yes	Click here to enter text.
Are you pregnant or breastfeeding, or contemplating pregnancy	☐ No	☐ Yes	Click here to enter text.
Do you currently smoke	☐ No	☐ Yes	Click here to enter text.
Do you practice personal hygiene at work, for example nail biting, frequency of hand washing, eating or smoking, clean shaven, shower and change into clean clothes at end of shift	☐ No	☐ Yes	

Specific health questions (tick all relevant boxes)

Do you have or have you ever had:			**Comments** (all 'yes' answers)
High blood pressure	☐ No	☐ Yes	Click here to enter text.
Kidney or bladder disease	☐ No	☐ Yes	Click here to enter text.
Anaemia or other blood disorders	☐ No	☐ Yes	Click here to enter text.
Fits, blackouts, dizziness or fainting	☐ No	☐ Yes	Click here to enter text.
Chronic fatigue or tiredness	☐ No	☐ Yes	Click here to enter text.
Any neurological condition affecting nerves in your feet or hands, your coordination or balance	☐ No	☐ Yes	Click here to enter text.
Skin disorders or dermatitis	☐ No	☐ Yes	Click here to enter text.
Any form of cancer	☐ No	☐ Yes	Click here to enter text.
Any other significant health conditions	☐ No	☐ Yes	Click here to enter text.

General health assessment (if applicable)

Height: Click here to enter text. cm **Weight:** Click here to enter text. kg

BP: Click here to enter text. / Click here to enter text. mmHg

Urinalysis

Blood: ☐ Normal ☐ Abnormal

Protein: Click here to enter text.

Sugar: Click here to enter text.

Referred for further testing

☐ No ☐ Yes

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Cardiovascular system			**Medical comments** (for all yes/abnormal)
Blood pressure	☐ Normal	☐ Abnormal	Click here to enter text.
Heart rate	☐ Normal	☐ Abnormal	Click here to enter text.
Heart sounds	☐ Normal	☐ Abnormal	Click here to enter text.
Murmurs present	☐ No	☐ Yes	Click here to enter text.
Evidence of cardiac failure/oedema	☐ No	☐ Yes	Click here to enter text.
Respiratory system			
Breathing normal and regular in character	☐ Yes	☐ No	Click here to enter text.
Auscultation normal	☐ Yes	☐ No	Click here to enter text.
Signs of past/present respiratory disease	☐ No	☐ Yes	Click here to enter text.
Skin			
Eczema, dermatitis or allergy	☐ No	☐ Yes	Click here to enter text.
Skin cancer or other abnormality	☐ No	☐ Yes	Click here to enter text.
Evidence of nail biting	☐ No	☐ Yes	Click here to enter text.
Other	☐ No	☐ Yes	Click here to enter text.

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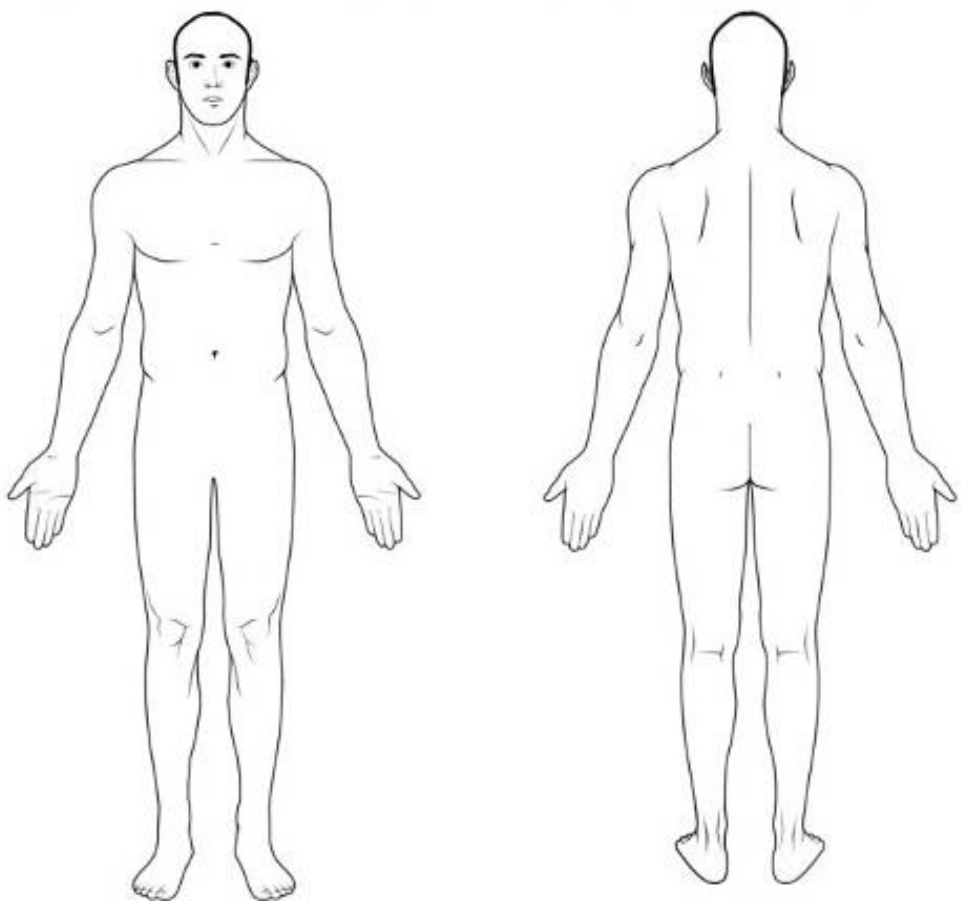

Figure 2 Template of the human body to indicate the location of abnormalities

Biological monitoring results

Include/attach at least the previous two test results (if available)

Date	Blood lead level	Recommended action and/or comment
Click here to enter a date.	Click here to enter text.	Click here to enter text.
Click here to enter a date.	Click here to enter text.	Click here to enter text.

Details of pathology service: Click here to enter text.

Other medical history, family medical history, current medication, comments, tests or recommendations (use separate sheet if necessary)

Click here to enter text.

Registered medical practitioner (responsible for supervising health monitoring)

Name: Click here to enter text.

Signature:

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Date: Click here to enter a date.

Tel: Click here to enter text. **Fax:** Click here to enter text.

Registration Number: Click here to enter text.

Medical Practice: Click here to enter text.

Address: Click here to enter text.

Suburb: Click here to enter text. **Postcode:** Click here to enter text.