The Australasian Faculty of Occupational and Environmental Medicine (WA)

PO Box 998
Nedlands WA 6909

25 November 2019

WHS Reform
Locked Bag 100
East Perth WA 6892

By email: WHSreform@dmirs.wa.gov.au

Dear Sir,

Public Comment - Work Health and Safety Regulations Submission

Attached is the submission on behalf of the Western Australian AFOEM Regional Committee in response to the invitation for public comment on the differences between the national model WHS regulations and the OSH regulations 1996.

Yours sincerely,

[redacted]

Dr Evelyn Lee
Chair of AFOEM WA Regional Committee

Public Comment on National Model Work Health and Safety Regulations

This is a submission from the Australasian Faculty of Occupational and Environmental Medicine (AFOEM) of the Royal Australasian College of Physicians in Western Australia. AFOEM is the peak body for Occupational and Environmental Medicine with over 500 medical specialists in Australia and New Zealand.

Occupational and environmental physicians:

- promote health and safety in the workplace.
- have specialist skills and knowledge in the prevention and management of ill-health and injury in the workplace.
- are trained in workplace assessments to identify hazards to the health of workers, undertake health risk assessments in the workplace and advise on ways to reduce health and injury risks to workers.
- develop workplace health surveillance programs to detect health problems in workers at an early stage and advise on appropriate action.
- are skilled in reviewing the latest medical and scientific evidence to ensure best practice in occupational and environmental health.
- develop and undertake education and training in the workplace.
- develop and undertake environmental health risk assessment and preventative programs.
- consult widely to government, the public sector and big and small industries within the private sector.

Health Monitoring (WHS: Division 6; reg. 368 - 379)

For the purpose of this paper, “health surveillance” will be used when referring to the WA OSH regulations and “health monitoring” in reference to the model WHS regulations. Biological monitoring is a subset of health monitoring. It is acknowledged that a change of terminology to “health monitoring” will bring consistency across the states.

Existing WA Health Surveillance Model (OSH Legislation)

The relevant OSH regulations pertaining to the health surveillance system in WA is in Part 5 (reg. 5.1, 5.21, 5.23, 5.24, 5.26).

WA has a health surveillance model that is the envy of other states and should be retained. WA is unique among the states in that health surveillance is supervised and undertaken by an “Appointed Medical Practitioner” and is overseen by Occupational Physicians within the regulatory body.

The Appointed Medical Practitioner (AMP):

(a) is adequately trained to conduct health surveillance in relation to the hazardous substance;
(b) is appointed by the employer in consultation with the workers;
(c) has duties described in the regulations requiring the AMP to notify and explain the results to the worker; inform the employer of the outcome of health surveillance and whether any remedial action is required; and to notify WorkSafe of the health surveillance results;
(d) has a duty to maintain health surveillance records for 30 years

The Occupational Physicians within the regulatory body:

(a) develop the health surveillance tools and guidelines for AMPs
(b) provide education and mentoring of AMPs
(c) conduct AMP workshops to inform and update AMPs for consistency of standards and practice.
(d) act as a resource to AMPs, Inspectors and employers.
(e) review and monitor health surveillance results reported to the regulator
(f) refer to the inspectorate for intervention as required
(g) undertake quality assurance including audits of health surveillance performed by AMPs with feedback to AMPs
(h) continually review and revise the health surveillance system for continued improvement

Benefits of the WA Health Surveillance system

Health surveillance aims to identify those individuals with early signs of health impairment that can be reversed by limiting further occupational exposure (Hoffman, et al, 2019).

1) The WA health surveillance threshold is low, that is, when the worker's health is "at risk" (in contrast to "significant risk" within the model WHS regulations) or if the person was "exposed or likely to have been exposed" in excess of the exposure standard for that hazardous substance.

The WA threshold is inclusive and enables early identification and early intervention (e.g. removal from exposure; remedial action) for the protection of the worker and thus the prevention of serious adverse health effects or disease from the hazardous substance exposure. For example, workers exposed to silica, asbestos, lead, isocyanates and so forth can proceed to health surveillance without waiting until there is a measured health effect as this would be too late. Delays can cause unnecessary anxiety and harm to health.

Reference: H Hoffman, R Palmer and S Phillips. Clinical Practice of Biological Monitoring. OEM Press, 2nd ed. 2019

2) Health surveillance is undertaken by "appointed medical practitioners" who are trained in health surveillance and are appointed by the employer in consultation with the worker. (OSH reg. 5.1)

   Appointed medical practitioners (AMP) have duties of care (OSH reg. 5.24) including keeping the records confidential, and notifying the worker, the employer and WorkSafe of the results or outcome of the health surveillance.

   The health and wellbeing of the worker is a prime consideration:

   - The AMP counsels the worker on personal hygiene, smoking, safe work practice, use of personal protective equipment.
   - The AMP determines whether the worker is safe to continue working with the hazardous substance or otherwise.
   - The AMP provides feedback to the worker, explaining the results and outcome of the health surveillance.

   The AMP informs the employer of any need for remedial action (review/improve workplace safety; personal hygiene; the need to be clean shaven if wearing respiratory protective equipment; removal from exposure) to protect the health of the worker.

   The AMP notifies health surveillance results directly to WorkSafe. This means that the regulator can liaise directly with the AMP (who is independent and not the employer), initiate prompt intervention or investigations to protect the health of the worker, monitor trends, and maintain a database of health surveillance data (which is unique in Australia). Furthermore, health surveillance notifications are reviewed to maintain quality standards with feedback to the AMP.

3) AMPs are provided with WA guidance and specific health surveillance tools (questionnaires including work exposures, health, risk assessment, etc), attend workshops on health surveillance and have access to the WorkSafe occupational health nurse and occupational physicians to discuss complex cases. This enables continuous improvement and standardisation of health surveillance practice.

Comments of the model WHS regulations

1. The threshold for health monitoring is set at "significant risk" (WHS reg. 368). The higher threshold will lead to health surveillance being delayed until the PCBU

believes that the threshold of “significant risk” has been reached. There is no clear definition of what constitutes “significant risk” and is subject to interpretation. This can exclude workers from health surveillance.

2. The medical practitioner is required to be experienced but is not required to be trained (WHS reg. 370; 371). However, health monitoring for hazardous substances is complex, and cannot be performed well by medical practitioners without the appropriate skills and knowledge.

   The medical practitioner has no duty to the worker, PCBU or the regulator.

   There is no quality control by the regulator over health monitoring undertaken or supervised the medical practitioner. Problems have arisen in other jurisdictions in relation to under-diagnosis (e.g. black lung).

   In providing advice to the PCBU on remedial action, the medical practitioner is limited to advising whether the worker may or may not continue working with the hazardous substance (WHS reg. 374(2)). There is no feedback on safety improvements or concerns in the workplace although the medical practitioner is well placed to do so.

3. Health monitoring records are held by PCBU’s (or by medical practitioners who do not report to the regulator) (WHS reg. 378(1); 388; 418; 444).

   Health monitoring data is fragmented and there is no central repository of data in the state (with the regulator) to allow prompt and proactive actions to prevent health effects from exposure and to identify emerging issues (e.g. silicosis).

   The regulator is not informed by the PCBU until the worker has been removed from exposure or a disease, injury or illness has occurred. This could mean that a worker could have clinical lead poisoning, mercury poisoning etc or has been diagnosed with diseases such as silicosis or asbestosis before the regulator is informed. This is too late and is contrary to the purpose and principles of health surveillance or health monitoring. In other words, health monitoring will fail to prevent diseases or ill health.

4. The worker receives a copy of the health monitoring report from the PCBU (WHS reg. 375). The worker will not have an understanding of the health effects of their exposure and the significance of workplace safe work procedures and hygiene practices to protect them from ill health. It is best practice for the medical practitioner to provide this to the worker with an explanation (WA model).

5. The PCBU provides a copy of the health monitoring report to the regulator (WHS reg. 376) resulting in no accountability from the medical practitioner completing the health monitoring to ensure that it is of sufficient quality and consistent with the intent of health monitoring.

Recommendation

We strongly advocate retention of the WA health surveillance OSH regulations

(Part 5 - reg. 5.1, 5.21, 5.23, 5.24, 5.26) which are more protective of the health of workers. It is important that the standard, effectiveness and availability of health surveillance is maintained in WA to prevent emergence of occupational disease.

We strongly support retention of the Appointed Medical Practitioner system which has served to protect the health of WA workers who are exposed to hazardous substances.

The quality and standard of health surveillance can be further improved by registering AMP's by the regulator, to facilitate engagement, education and ensure standards are maintained.

We further advocate that WA does not adopt the Safe Work Australia Health Monitoring Guidelines, which are repetitive, complex, time-consuming for both workers and medical practitioners to complete, which ultimately has impact on the cost to PCBUs. This diverts from the main purpose of health surveillance/ health monitoring to detect early changes to health from hazardous substance exposure.

To this end, we attach copies of the WorkSafe WA Health surveillance Guidelines for Lead and the Safe Work Australia Health Monitoring Guidelines for Lead for comparison.

- Attachment 1: WorkSafe WA Health Surveillance Guidelines on Lead (4 pages)
- Attachment 2: WorkSafe WA Health Surveillance Notification Form (2 pages)
- Attachment 3: Safe Work Australia Health Monitoring for Lead Guidelines and Form (16 pages)

Health Surveillance – Lead (Inorganic)

Appointed Medical Practitioners (AMP) undertaking health surveillance are expected to have an understanding of the potential adverse health effects of inorganic lead, and to use their clinical knowledge to advise on health surveillance for workers in the workplace.

Adverse health effects

Lead is a cumulative toxic substance. Exposure to high levels of lead dust or fumes may cause anaemia, peripheral nerve damage (weakness), and kidney and brain damage. Lead inhibits enzymes (including ALA dehydratase, ferrochelatase) which are involved in the synthesis of haem, which is an essential component of haemoglobin in red blood cells. Lead also shortens the lifespan of red blood cells. Anaemia develops when the lifespan has been reduced from 128 days to 30 days. Affected red cells are more fragile and their removal from circulation stimulates the bone marrow production (stippled red cells).

Lead enters the body through inhalation or ingestion. 10% of ingested lead is absorbed. 50-80% of inhaled lead is absorbed through the lungs. Lead is excreted predominantly by the kidneys (70%).

Lead is distributed in the body to 3 compartments:

a) blood (bound to red blood cells, bound to blood protein, and as free plasma lead) with a half-life of 35 days;
b) soft tissues with a half-life of 40 days, and
c) bone (90% of total body lead) with a half-life of 6.7 years (range 3.4-15 years).

Lead is released from bone in a range of conditions (including osteoporosis, fractures, pregnancy) thus raising the lead levels in blood.

Young children and women are more vulnerable. Young children have a higher rate of absorption of lead from ingestion. They are also more susceptible to encephalopathy at lower blood lead levels. Caution is recommended in pregnancy as lead crosses the placental barrier, and in breast feeding as lead is present in breast milk though at a lower level.

Symptoms can be subtle, for instance, tiredness, moodiness, irritability, headache and vague aches. Adults are mostly asymptomatic or unaware at blood lead levels in excess of 60 µg/dL. Anaemia does not generally occur at blood lead levels below 80 µg/dL. Abdominal colic, peripheral nerve palsies, muscle wasting and encephalopathy may develop at blood lead levels exceeding 100 µg/dL. Lead encephalopathy (headache, vomiting, ataxia, seizures, paralysis, stupor, coma) is more likely at blood lead levels in excess of 150 µg/dL in adults (and at 70-90 µg/dL in children). However, clinical lead poisoning with encephalopathy has become uncommon nowadays due to improved safety controls in the environment and workplaces.

Surveillance guidelines

Health surveillance is required for those who are exposed to the hazards of lead in their workplace. A baseline health surveillance is recommended prior to commencement of work, then 2 and 6 months after the initial test. Thereafter, the frequency of testing is determined by the blood lead levels as outlined below (see “Other Considerations” section). The nature and duration of the exposure, the work environment factors/controls, poor personal hygiene and smoking history are important factors in the assessment of risks and potential for elevated blood lead levels.

Workplaces should provide amenities for hot water, hand washing and showering. Personal hygiene must be strict (washing face and hands before eating; not smoking, eating or drinking in lead work area; laundry provisions, showering and changing into clean clothes at work before leaving work). It is important for workers not to bring lead dust home from work.

The WorkSafe Health Surveillance Notification Form - Lead (inorganic) includes the following health surveillance components:

1. Work history – duration of exposure including year of first exposure, nature and extent of lead exposure, workplace controls and personal hygiene, use of respiratory protection, provision of work clothing, laundering, facilities for washing face, hands, showering and changing into clean clothes at the end of the shift.
2. Blood Lead Levels (BLL) in micrograms per deciliter (µg/dL)

Monitoring blood lead levels enables early intervention by the AMP. Early intervention includes education (lead hazard and health effects), counselling (safe work practice, personal hygiene), temporary removal from lead work and re-instatement when appropriate, and feedback to the employer for remedial measures (to improve safety controls).

Blood lead thresholds:

The average blood lead level among Australians has been estimated to be 5 µg/dL. On 1 October 2019, the thresholds have been lowered (Occupational Safety and Health Regulations 1996). The removal level for females of reproductive capacity has been reduced to 10 ug/dL. The removal level for males and females not of reproductive capacity has been set at 30 µg/dL. The definition of 'lead-risk job' has been changed to reflect this.

1. Male workers, and female workers (not of reproductive capacity)

Blood Lead Level	Recommended actions
Less than 10 µg/dL	Re-test 6 monthly
10 to below 20 µg/dL	• Counsel worker and review personal hygiene/work practice. • Liaise with employer regarding remedial measures (review personal hygiene, investigate workplace exposure and safety controls). • Re-test at 3 months.
20 to below 30 µg/dL	• Counsel worker and review personal hygiene/work practice. • Consider removal from lead work when BLL exceeds 25 µg/dL. • Liaise with employer regarding remedial measures (as above). • Re- test in 6 weeks. • Consider medical review
30 µg/dL or higher	• Remove from lead work and notify all parties including WorkSafe without delay. • AMP to conduct medical examination within 7 days. • Counsel employee and review personal hygiene/work practice. • Liaise with employer regarding remedial measures (as above). • Re-test in 1 month and so forth. • AMP may certify suitable to return to lead work when BLL is less than 20 µg/dL. • Medical review at least annually.

2. Female employees of reproductive capacity

Pregnant / breastfeeding female employees are not permitted to perform lead work [Reg. 5.63].

Blood lead level	Recommended actions
Less than 5 μg/dL	• 6 monthly testing
5 to below 10 μg/dL	• Counsel worker and review personal hygiene/work practice. • Liaise with Employer regarding remedial measures (review personal hygiene, investigate workplace exposure and safety controls). • Re-test at 6-8 weeks. • Consider medical review.
10 μg/dL or greater	• Remove from lead work and notify all parties including WorkSafe without delay. • AMP to conduct medical examination within 7 days. • Counsel worker and review personal hygiene/work practice. • Liaise with Employer regarding remedial measures (as above). • Re-test at 1 month and so forth. • AMP may certify suitable to return to lead work when BLL is below 5 μg/dL. • Medical review at least annually.

Health counselling

- Inform workers of potential adverse health effects from lead exposure
- Counsel all workers to stop smoking
- Be clean shaven for effective respiratory protection
- Reinforce safe work practice (effective local exhaust ventilation, not to complete dry sweeping, cleaning work area with HEPA filter vacuum cleaner, respirators with appropriate level of protection, etc.)
- Reinforce personal hygiene and cleanliness, including:
    - wash face and hands before eating or drinking
    - no eating, drinking or smoking in the (dusty) workshop
    - shower and change into clean clothes and footwear before leaving work

Removal from lead-risk work

The AMP notifies the employer to arrange the removal of the employee immediately. The AMP conducts a medical examination of the employee within 7 days of the removal.

The frequency of blood lead level testing is at the discretion of the AMP. The employee must not return to lead work until:

- the blood lead level is less than 20ug/dL for male employees and female employees not of reproductive capacity, or
- the blood lead level is less than 5ug/dL for female employees of reproductive capacity,

and

- the AMP has examined the employee, and
- the AMP has certified the employee suitable to return to lead work.

Notification requirements

Health surveillance results are to be sent to WorkSafe Western Australia by the AMP using the **WorkSafe Health Surveillance Notification Form (Lead)** together with:

- Pathology report with blood lead levels reported in μg/dL

The AMP is required to explain the results of the health surveillance to the worker, and provide feedback to the employer to enable remedial action (i.e. review and improve safety controls in the workplace).

Any identified cases of elevated blood lead level must be reported by the AMP to WorkSafe promptly. The AMP keeps WorkSafe informed of the outcome of the employee removed by providing Notification Form, reports and pathology reports.

Where the BLL is at levels of clinical concerns, the AMP should refer to the appropriate physician or toxicologist for clinical management and advice.

References

Refer to the WorkSafe WA guidelines for health surveillance when planning and implementing health surveillance.

- The Occupational Safety and Health Regulations 1996. Western Australian Government.
- Health surveillance - WorkSafe website

Other References

Safe Work Australia resources are useful as an adjunct resource.

- Health monitoring for exposure to hazardous chemicals. Guide for medical practitioners. February 2013. Safe Work Australia.
- Hazardous chemicals requiring health monitoring. March 2013. Safe Work Australia.

LEAD (INORGANIC)

DEFINITIONS

The following definitions apply to this Guideline.

blood lead level monitoring means the testing of the venous or capillary blood of a person by a laboratory accredited by the National Association of Testing Authorities (NATA), under the supervision of a registered medical practitioner, to determine the blood lead level.

blood lead level means the concentration of lead in whole blood expressed in micromoles per litre (μmol/L) or micrograms per decilitre (μg/dL).

biological monitoring means:

a. the measurement and evaluation of a substance, or its metabolites, in the body tissue, fluids or exhaled air of a person exposed to the substance; or

b. blood lead level monitoring.

female of reproductive capacity means a female other than a female who provides information stating that she is not of reproductive capacity.

lead means lead metal, lead alloys, inorganic lead compounds and lead salts of organic acids.

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 be more than:

a. for a female of reproductive capacity—10μg/dL (0.48μmol/L); or

b. in any other case—30μg/dL (1.45μmol/L).

Note: examples of lead processes can be found at Part 11.

lead process area means a workplace or part of a workplace where a lead process is carried out.

BASELINE HEALTH MONITORING BEFORE STARTING WORK IN AN INORGANIC LEAD PROCESS

1. Baseline health monitoring

Baseline health monitoring of the worker is required:

- before the worker first starts lead risk work
- one month after the worker first starts lead risk work.

If work is identified as lead risk work after a worker starts the work, health monitoring of the worker must be provided:

a. as soon as practicable after the lead risk work is identified

b. one month after the first monitoring of the worker under paragraph (a).

2. Collection of demographic data

3. Work History

4. Medical history

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

- presence of symptoms with an emphasis on reproductive history including current pregnancy or breast feeding, neuropsychologic problems, haematological disorders and renal disorders
- prior history of non-work-related lead exposure e.g. hobbies like shooting (exposure to gun powder) and fishing (exposure to lead sinkers)
- history of medication or medical treatment including recent chelating agent therapy e.g. EDTA
- smoking history.

5. Physical Examination

A physical examination will be conducted, with an emphasis on the gastrointestinal, haematopoietic, renal, cardiovascular, reproductive and neurological systems.

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

6. Investigation

The following tests may be conducted to test the worker's baseline exposure:

- full blood examination
- blood lead in whole blood or packed red cells
- serum creatinine
- routine urinalysis
- pulmonary function test in cases where respiratory protection is likely to be required.

7. Counselling

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/level of urgency should be recorded in the Health Monitoring Report, see Appendix 1. For further information about counselling see Appendix 2.

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 (<18).
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.
Pregnancy	Workers who are pregnant or breastfeeding should be advised to seek alternative work during that period from their PCBU which does not involve lead risk work.

Personal hygiene

Workers should be encouraged to use changing rooms and washing, showering and toilet facilities at the workplace in order to minimise secondary lead exposure from contaminated clothing; minimise ingestion of lead; and avoid the spread of lead contamination.

Workers who bite their nails should be counselled on the increased risk it places on lead intake.

Eating, drinking and smoking

Workers should be reminded:

- they are not permitted to smoke, carry smoking materials, eat, chew gum or drink in a lead process area
- the importance of removing lead contaminated clothing and equipment and to wash their hands and faces before entering areas provided 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

8. Monitoring exposure to inorganic lead

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

<u>For females not of reproductive capacity and males</u>

- six months after the last biological monitoring of the worker if the last monitoring shows a blood lead level of less than 30µg/dL (1.45µmol/L); **or**
- three months after the last biological monitoring of the worker if the last monitoring shows a blood lead level of 30µg/dL (1.45µmol/L) or more but less than 40µg/dL (1.93µmol/L); **or**
- six weeks after the last biological monitoring of the worker if the last monitoring shows a blood lead level of 40µg/dL (1.93µmol/L) or more.

<u>For females of reproductive capacity</u>

- three months after the last biological monitoring of the worker if the last monitoring shows a blood lead level of less than 10µg/dL (0.48µmol/L); **or**
- six weeks after the last biological monitoring of the worker if the last monitoring shows a blood lead level of 10µg/dL (0.48µmol/L) or more.

The frequency of biological monitoring must 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 the above biological exposure limits are breached, workplace practices and controls should be immediately reviewed as this suggests current controls are not performing satisfactorily.

9. Removal of a worker from a lead risk work

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

1. biological monitoring of the worker shows that the worker's blood lead level is, or is more than:
   - for females not of reproductive capacity and males—50µg/dL (2.42µmol/L); **or**
   - for females of reproductive capacity—20µg/dL (0.97µmol/L); **or**
   - for females who are pregnant or breastfeeding—15µg/dL (0.72µmol/L); **or**
2. following a medical examination of the worker, the medical practitioner who supervised the health monitoring recommends that the worker must be removed from carrying out the lead risk work; **or**
3. 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 mentioned above.

If a worker's blood lead level is above the prescribed removal level, the Health Monitoring Report should advise immediate removal to alternative duties. A second medical examination should be conducted within seven days after the day the worker is removed from lead risk work.

10. Return to work

The frequency of repeat blood lead level tests after removal from lead risk work is at the discretion of the 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.

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

- for females not of reproductive capacity and males—40µg/dL (1.93µmol/L); **or**
- for females of reproductive capacity—10µg/dL (0.48µmol/L); **AND**

they have been assessed as medically fit to return to lead risk work by the medical practitioner supervising the health monitoring.

SUPPLEMENTARY INFORMATION ON INORGANIC LEAD

11. Work activities that may represent a high risk exposure (lead processes)

It is a requirement of the regulations that a PCBU determines whether a job is a lead risk job requiring health monitoring. The following **lead processes** may involve significant exposures to lead:

a. work that exposes a person to lead dust or lead fumes arising from the manufacture or handling of dry lead compounds

b. 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

c. 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

d. spraying molten lead metal or alloys containing more than five per cent by weight of lead metal

e. melting or casting lead alloys containing more than five per cent by weight of lead metal in which the temperature of the molten material exceeds 450°C

f. recovering lead from its ores, oxides or other compounds by thermal reduction process

g. dry machine grinding, discing, buffing or cutting by power tools alloys containing more than 5 per cent by weight of lead metal

h. machine sanding or buffing surfaces coated with paint containing more than one per cent by dry weight of lead

i. a process by which 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

j. radiator repairs that may cause exposure to lead dust or lead fumes

k. fire assays if lead, lead compounds or lead alloys are used

l. hand grinding and finishing lead or alloys containing more than 50 per cent by dry weight of lead

m. spray painting with lead paint containing more than one per cent by dry weight of lead;

n. 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

o. 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

p. a process that exposes a person to lead dust or lead fumes arising from manufacturing or testing detonators or other explosives that contain lead

q. a process that exposes a person to lead dust or lead fumes arising from firing weapons at an indoor firing range

r. foundry processes involving:

- melting or casting lead alloys containing more than one per cent by weight of lead metal in which the temperature of the molten material exceeds 450°C
- dry machine grinding, discing, buffing or cutting by power tools lead alloys containing more than one per cent by weight of lead metal

s. a process decided by the regulator to be a lead process under regulation 393.

12. Observed health effects and blood lead levels

Lead affects people of all ages, but the effects of lead are considered most serious in young children. Inorganic lead uptake occurs as a result of ingestion or inhalation of inorganic lead particles. Not only are particulates in air, like dusts and fumes, important sources of exposure in the workplace, but also from eating and smoking with contaminated hands due to poor personal hygiene.

The respiratory tract provides the most efficient route of absorption while gastrointestinal absorption is relatively poor in adults. When inhaled, most inorganic forms of lead deposited in the alveolar regions appear to be almost completely absorbed, although it is possible lead compounds of low solubility like lead sulphide may accumulate to some extent in the lung. Absorption of inhaled lead is affected by various factors including personal characteristics, physical activity, particle size and solubility of the airborne lead.

In 2007, Kosnett et al published *Recommendations for Medical Management of Adult Lead Exposure*, which shows a summary of the adverse health risks associated with different blood lead concentrations and presents corresponding medical management recommendations that range from discussion of risks and reductions of lead exposure at low levels to removal from lead exposure accompanied by probable chelation therapy at the highest levels, see Appendix 3.

The publication notes that research conducted in recent years has increased concern about the toxicity of lead at low blood lead levels and supports a reappraisal of the levels of lead exposure that may be safely tolerated in the workplace. Consistent with the American Conference of Governmental Industrial Hygienists (ACGIH) recommendations, it recommends individuals be removed from work lead exposure if a single blood lead measurement exceeds 30μg/dL.

It focuses on four categories of health effects – hypertension, renal function, cognitive dysfunction, and adverse reproductive outcome; however, it does not mention carcinogenicity. Since there is no dose-response relationship for cancer, the risk of this disease applies to all blood lead level bands. The designation of risks as either "short-term" or "long-term," depending on whether the risks are associated with exposure lasting less than or more than one year, reflects a qualitative understanding of the duration of lead exposure that may be required to elicit certain adverse health effects of lead. The categorisation of risks in Appendix 3 by discrete bands of blood lead concentration is a qualitative assessment.

Inhibition of the mitochondrial enzyme, ferrocheletase, which is the next most sensitive enzyme, results in accumulation of free erythrocyte protoporphyrin (FEP) in the red blood cells primarily as zinc protoporphyrin (ZPP) and increased urinary excretion of coproporphyrin. Because ZPP remains in the erythrocyte for the average lifespan of the red blood cell, the blood ZPP level reflects averaged exposure over a three-month period.

Blood ZPP levels can therefore be used as a measures of lead exposure. There is a lot of individual variability in the protoporphyrin response to lead absorption and it is suggested results are compared with previous results from the same individual. Monitor the individual response rather than interpret a particular level. The protoporphyrin response lags behind the current blood lead level as an increase only becomes measurable in the peripheral blood as affected erythrocytes mature and are released from the bone marrow. The lag is around two to three months. It is recommended the testing for ZPP as a measure of lead exposure only be considered once removal limits have been reached[1]. Continued removal from lead work is recommended until levels return to satisfactory levels.

13. Inorganic lead toxicity

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

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

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

When inorganic lead enters the body it does not undergo biological transformation. Lead is a cumulative poison. This means if more lead is being absorbed by the body than it is able to excrete, the amount stored in the body will increase over time.

Adults have an approximate 94 per cent body burden, that is more is stored in the body than circulated in the blood. 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.

Lead is preferentially stored in the skeleton and in regions undergoing the most active calcification at the time of exposure—cortical and trabecular. Acute lead poisoning is uncommon today in work settings.

Distribution of lead to various organs has variable elimination rates. Soft tissue is fast whereas skeletal is slow. Blood lead clearance shortly after exposure changes is approximately 20-35 days - red blood cells have a half life of 120 days. Redistribution from bone, however, is much slower and takes approximately three to 30 years.

Body recovery is slower each time exposure occurs and body burden builds up over a lifetime. Clinical treatment using chelation therapy to reduce lead levels may decrease total lead body burden but not the risk of cognitive effects.

14. Carcinogen and reproductive toxicant classifications[2]

The following are examples of lead chemicals with GHS carcinogen and reproductive toxicant classifications:

- Lead hexafluorosilicate: Repr. 1A
- Silicic acid, lead nickel salt: Carc. 1A (May cause cancer by inhalation), Repr. 1A
- Lead compounds with the exception of those specified elsewhere in Annex VI: Repr. 1A
- Lead diazide: Repr. 1A
- Lead diazide, [≥ 20% phlegmatiser]: Repr. 1A
- Lead chromate: Carc. 1B, Repr. 1A
- Lead di(acetate): Repr. 1A
- Trilead bis(orthophosphate): Repr. 1A
- Lead acetate, basic: Carc. 2, Repr. 1A
- Lead(II) methanesulphonate: Repr. 1A
- Lead sulfochromate yellow: Carc. 1B, Repr. 1A
- Lead chromate molybdate sulfate red: Carc. 1B, Repr. 1A
- Lead hydrogen arsenate: Carc. 1A (May cause cancer), Repr. 1A

2 This classification information is provided on an advisory basis and is taken from the European Union's Annex VI to Regulation (EC) No 1272/2008, updated by the 1st Adaption to Technical Progress to the Regulation. Other hazard classes and categories may apply – see http://esis.jrc.ec.europa.eu/index.php?PGM=cla. These classifications are legally binding within the European Union.

Key

Abbreviation	Meaning	Hazard statement
Carc. 1A	Carcinogenicity Category 1A	May cause cancer.
Carc. 1B	Carcinogenicity Category 1B	May cause cancer
Carc. 2	Carcinogenicity Category 2	Suspected of causing cancer
Repr. 1A	Reproductive Toxicity Category 1A	May damage the unborn child, suspected of damaging fertility

FURTHER READING

Association of Occupational and Environmental Clinics (AOEC), *Medical Management Guidelines for Lead-Exposed Adults* Revised 04/24/2007.

Sourced AOEC - http://www.aoec.org/principles.htm

Australian Institute of Occupational Hygienists Position Paper, *Inorganic Lead and Occupational Health Issues*, March 2009.

Cherrie JW, Semple S, Christopher Y, Saleem A, Hughson GW, Phillips A, 'How Important is Inadvertent Ingestion of Hazardous Substances at Work?', *Annals of Occupational Hygiene*, vol 50(7): pp 693-704, 2006. http://annhyg.oxfordjournals.org/cgi/content/full/50/7/693

Lauwerys RR, Hoet P, *Industrial Chemical Exposure Guidelines for Biological Monitoring*, 3rd Ed, Lewis Publishers, Boca Raton, 2001.

Lead Development Association International (LDAI), *Voluntary Risk Assessment Report on Lead and Some Lead Compounds*, Human Health Section, Interim Revised Draft, March 2008, prepared by the ILZRO and EBRC consulting under contract to the LDAI Lead Risk Assessment Working Group.

Lundströrom N-G, Nordberg G, Englyst V, Gerhardsson L, Hagmar L, Jin T, Rylander L, Wall S, 'Cumulative Lead Exposure In Relation to Mortality and Lung Cancer Morbidity in a Cohort of Primary Smelter Workers', *Scand J Work Environ Health*, vol 23(1); pp 24-30, 1997.

Skerfving S, *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, 2005. https://gupea.ub.gu.se/dspace/handle/2077/4356

APPENDIX 1

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 Regulations or with the consent of the worker.

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

Section 1 is to be forwarded to the PCBU who has engaged your services. A copy of laboratory report(s) must be attached > > > >

Section 2 may contain confidential information which may not be relevant to the health monitoring program being carried out. This section should be retained by the medical practitioner. Information which is required to be given to the PCBU should be summarised in part 7 of section 1.

SECTION 1 – THIS SECTION TO BE RETURNED TO THE PCBU		
1. PERSON CONDUCTING A BUSINESS OR UNDERTAKING		
Company / Organisation name:		
Site address:		
Suburb:		Postcode:
Site Tel:	Site Fax:	Contact Name:
2. OTHER BUSINESSES OR UNDERTAKINGS ENGAGING THE WORKER		
Company / Organisation name:		
Site address:		
Suburb:		Postcode:
Site Tel:	Site Fax:	Contact Name:
3. WORKER		(✓) all relevant boxes
Surname:		Given names:
Date of birth: DD/MM/YYYY	Sex: ☐ Male	☐ Female
Address:		
Suburb:		Postcode:
Current Job:	Tel(H):	Mob:
Date started employment : DD/MM/YYYY		
4. EMPLOYMENT IN LEAD RISK WORK		(✓) all relevant boxes
1. ☐ New to lead work		
2. ☐ New worker but not new to lead work		
3. ☐ Current worker continuing in lead work		
4. Worked with lead since DD/MM/YYYY		

5. Satisfactory personal hygiene (for example nail biting, frequency of hand washing)	☐ Yes ☐ No
6. Risk assessment completed	☐ Yes ☐ No

5. WORK ENVIRONMENT ASSESSMENT (✓) all relevant boxes

Date of assessment: DD/MM/YYYY

Lead Industry	☐ Smoker ☐ Ex-smoker ☐ Non-smoker		
☐ Fire Assay	**Controls:**		
☐ Foundry	Wear gloves	☐ Yes	☐ No
☐ Lead Battery – Maintenance	Respirator use	☐ Yes	☐ No
☐ Lead Burning	Local exhaust ventilation	☐ Yes	☐ No
☐ Lead Flux – Manufacture	Overalls / work clothing	☐ Yes	☐ No
☐ Leadlight Work	Laundering by employer	☐ Yes	☐ No
☐ Lead Paint – Manufacture	Wash basins & showers (with hot & cold water)	☐ Yes	☐ No
☐ Lead Paint – Painting	Smoking or eating in workshop	☐ Yes	☐ No
☐ Lead Paint – Stripping/ Cleaning	Dry sweeping	☐ Yes	☐ No
☐ Lead Sinker – Manufacture	**Personal hygiene:**		
☐ Metal Recycling	Clean Shaven	☐ Yes	☐ No
☐ Monumental Work	Shower & change into clean clothes at end of shift	☐ Yes	☐ No
☐ Radiator Repair			
☐ Firing Range			
☐ Other (specify):			

6. BIOLOGICAL MONITORING RESULTS Include at least the previous two test results (if available)

Date	**Blood lead level** (µg/dL or µmol/L)	**Recommended Action and/or Comment**
1. DD/MM/YYYY		Insert baseline or last known result and date
2. DD/MM/YYYY		
3. DD/MM/YYYY		
4. DD/MM/YYYY		

5. DD/MM/YYYY		
6. DD/MM/YYYY		

7. RECOMMENDATIONS (by Medical Practitioner) (✓) all relevant boxes

1. ☐ Suitable for work with lead
2. ☐ Counselling required
3. ☐ Review workplace controls
4. ☐ Repeat health assessment in _____ month(s) / _____ week(s)
5. ☐ Removal from work with lead On DD/MM/YYYY
6. ☐ Medical examination by Medical Practitioner On DD/MM/YYYY
7. ☐ Fit to resume lead risk work From DD/MM/YYYY
8. ☐ Referred to Medical Specialist (respiratory/dermatology/other): On DD/MM/YYYY

Specialist's name:

Additional comments or recommendations arising from health monitoring:

Medical Practitioner (responsible for supervising health monitoring)

Name:	Signature	Date: DD/MM/YYYY
Tel:	Fax:	Registration Number:
Medical Practice:		
Address:		
Suburb:		Postcode:

SECTION 2 – THIS SECTION TO BE RETAINED BY THE MEDICAL PRACTITIONER			
1. PERSON CONDUCTING A BUSINESS OR UNDERTAKING			
Company / Organisation name:			
Site address:			
Suburb:			Postcode:
Site Tel:	Site Fax:	Contact Name:	
2. OTHER BUSINESSES OR UNDERTAKINGS ENGAGING THE WORKER			
Company / Organisation name:			
Site address:			
Suburb:			Postcode:
Site Tel:	Site Fax:	Contact Name:	
3. WORKER			(✓) all relevant boxes
Surname:		Given names:	
Date of birth: DD/MM/YYYY	Sex:	☐ Male	☐ Female ☐ Pregnant/Breast Feeding?
Address:			
Suburb:			Postcode:
Current Job:		Tel(H):	Mob:
Date started employment : DD/MM/YYYY			

4. GENERAL HEALTH ASSESSMENT (if applicable)

Symptoms of:	**Comments**	**Further testing?**
Skin disorders		☐ Yes ☐ No
Headaches, dizziness		☐ Yes ☐ No
Respiratory disorders		☐ Yes ☐ No
Irritation of eyes, nose or throat		☐ Yes ☐ No
Cough		☐ Yes ☐ No
CNS		☐ Yes ☐ No
Peripheral nervous system symptoms		☐ Yes ☐ No
Others:		☐ Yes ☐ No
Pregnant		☐ Yes ☐ No
Breastfeeding		☐ Yes ☐ No
Smoker		☐ Yes ☐ No

Height _____cm Weight _____kg Bp _____/_____ mmHg		

5. OTHER MEDICAL HISTORY, FAMILY MEDICAL HISTORY, CURRENT MEDICATION, COMMENTS, TESTS OR RECOMMENDATIONS (use separate sheet if necessary)

Medical Practitioner (responsible for supervising health monitoring)

Name:	Signature	Date: DD/MM/YYYY
Tel:	Fax:	Registration Number:
Medical Practice:		
Address:		
Suburb:		Postcode:

APPENDIX 2
COUNSELLING

Counselling is a process of dialogue between an individual worker and the various parties involved in the management of work exposure to lead.

Workers who are to start work in lead risk jobs or who work in lead risk jobs must be counselled on the health effects of lead. Workers excluded from working in lead risk jobs should also be counselled.

Counselling will usually be an informal discussion about a workplace or workstation, work practice, personal hygiene practice, and about the health effects of lead, between the worker and the medical practitioner at the time of attendance for biological monitoring. More formal discussion about these matters should take place during a medical examination carried out by the medical practitioner. If the worker is to be removed from work exposure to lead then there should be an emphasis on the health effects of lead and actions to prevent a recurrence of removal.

Workers who consider they have not completed their family should be counselled in particular on the effects of lead on male and female reproduction, as appropriate. Female workers working in lead-risk jobs should be counselled on the effects of lead on foetal and childhood development, in particular cognitive development. The level of counselling should be such that the worker can make an informed decision in regard to the risk to their own health and to a future foetus. Male workers should be told exposure to lead may adversely affect reproductive function. Female workers should be told exposure to lead during pregnancy may be associated with pregnancy complications and may pose a risk to the development of the foetus or eventual child.

Counselling may cover the following topics:

Physical maturity. As a guide people under the age of 16 should not be employed in lead processes.

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

Lead accumulation in the body, particularly in bones. This can be mobilised in some circumstances including pregnancy and old age.

Females of reproductive capacity should be informed about the reproductive hazards where blood lead level may exceed 10µg/dL (0.48µmol/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 to a level **well below** 10µg/dL (0.48µmol/L) for a period of at least a year prior to pregnancy.

Statistics show one in four pregnancies in Australia is unplanned, and because there is limited information on bone-lead mobility during pregnancy it is prudent to maintain blood lead levels for females who may later become pregnant below 20µg/dL (0.97 µmol/L).

It is for these reasons females of reproductive capacity should endeavour not to seek employment in lead risk jobs.

In certain circumstances, conception methods like *in vitro* fertilisation may need to be considered in assessing reproductive capacity.

Infants are more susceptible to the health effects of lead than adults. A breast feeding worker should keep her blood lead level below 10µg/dL (0.48 µmol/L) and as low as possible.

APPENDIX 3

Health-based management recommendations for lead-exposed adults*

Blood lead level (µg/dL)	Short-term risks	Long-term risks	
	(lead exposure < 1 year)	**(lead exposure ≥1 year)**	**Medical Management Recommended**
< 5	None documented	None documented	None indicated
5–9	Possible spontaneous abortion	Possible spontaneous abortion	Discuss health risks
	Possible postnatal developmental delay	Possible postnatal developmental delay	Reduce lead exposure for women who are or may become pregnant
		Possible hypertension and kidney dysfunction	
10–19	Possible spontaneous abortion	Possible spontaneous abortion	As above for BLL 5–9 µg/dL, plus:
	Possible postnatal developmental delay	Reduced birth weight	Decrease lead exposure
	Reduced birth weight	Possible postnatal developmental delay	Increase biological monitoring
		Hypertension and kidney dysfunction	Consider removal from lead exposure to avoid long-term risks if exposure control over an extended period does not decrease BLL < 10 µg/dL, or
		Possible subclinical neurocognitive deficits	if medical condition present that increases risk with continued exposure[a]
20–29	Possible spontaneous abortion	Possible spontaneous abortion	Remove from lead exposure if repeat BLL measured in 4 weeks remains ≥20 µg/dL
	Possible postnatal developmental delay	Possible postnatal developmental delay	
	Reduced birth weight	Reduced birth weight	
		Hypertension and kidney dysfunction	
		Possible subclinical neurocognitive deficits	
30–39	Spontaneous abortion	Spontaneous abortion	Remove from lead exposure
	Possible postnatal developmental delay	Reduced birth weight	
	Reduced birth weight	Possible postnatal developmental delay	

* Table is reproduced from: Recommendations for Medical Management of Adult Lead Exposure, Michael J Kosnett, Richard P Wedeen, Stephen J Rothenberg, Karen L Hipkins, Barbara L Materna, Brian S Schwartz, Howard Hu, and Alan Woolf. Environmental Health Perspectives, Volume 115, Number 3, March 2007.

Blood lead level (μg/dL)	Short-term risks (lead exposure < 1 year)	Long-term risks (lead exposure ≥1 year)	Medical Management Recommended
		Hypertension and kidney dysfunction	
		Possible neurocognitive deficits Possible nonspecific symptoms[b]	
40–79	Spontaneous abortion	Spontaneous abortion	Remove from lead exposure
	Reduced birth weight	Reduced birth weight	Refer for prompt medical evaluation
	Possible postnatal developmental delay	Possible postnatal developmental delay	Consider chelation therapy for BLL > 50 μg/dL with significant symptoms or signs of lead toxicity
	Nonspecific symptoms[b]	Nonspecific symptoms[b]	
	Neurocognitive deficits	Hypertension	
	Sperm abnormalities	Kidney dysfunction/nephropathy	
		Subclinical peripheral neuropathy	
		Neurocognitive deficits	
		Sperm abnormalities	
		Anemia	
		Colic	
		Possible gout	
≥80	Spontaneous abortion	Spontaneous abortion	Remove from lead exposure
	Reduced birth weight	Reduced birth weight	Refer for immediate/urgent medical evaluation
	Possible postnatal developmental delay	Possible postnatal developmental delay	Probable chelation therapy
	Nonspecific symptoms[b]	Nonspecific symptoms[b]	
	Neurocognitive deficits	Hypertension	
	Encephalopathy	Nephropathy	
	Sperm abnormalities	Peripheral neuropathy	
	Anemia	Neurocognitive deficits	
	Colic	Sperm abnormalities	
		Anemia	
		Colic	
		Gout	

BLL = blood lead level.

a. Medical conditions that may increase the risk of continued exposure include chronic renal dysfunction (serum creatinine > 1.5 mg/dL for men and > 1.3 mg/dL for women, or proteinuria), hypertension, neurologic disorders, and cognitive dysfunction.

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

GOVERNMENT OF WESTERN AUSTRALIA

WorkSafe Health Surveillance Notification: LEAD (Inorganic)

WORKSAFE Western Australia

Occupational Safety and Health Act 1984

CONFIDENTIAL

Use latest electronic version on website. Incomplete or illegible forms will be returned to sender.

1. EMPLOYEE / WORKER		**(X) all relevant boxes**
Last name:	Given names:	
Date of birth:	☐ Male ☐ Female	
Address:		
Tel (H):	Mob:	
Current job:	Date started:	
Female of reproductive capacity	☐ Yes ☐ No	Breastfeeding ☐ Yes ☐ No

2. EMPLOYER (Principal)	
Company:	
Site Address:	
Tel:	Fax:
Contact Name:	Employer email:

3. EMPLOYMENT IN LEAD-RISK WORK **(X) all relevant boxes**

New to lead work ☐ Yes ☐ No ☐ *Not directly working with lead*

☐ *Worked with lead since* *(mm/yyyy)* *With current employer since* *(mm/yyyy)*

4. WORK ENVIRONMENT ASSESSMENT **(X) all relevant boxes**

Lead- risk Work ***(✓) all relevant boxes***

- ☐ Fire assay
- ☐ Foundry
- ☐ Lead battery - maintenance
- ☐ Lead burning
- ☐ Lead flux - manufacture
- ☐ Leadlight work
- ☐ Lead paint – manufacture
- ☐ Lead paint - painting
- ☐ Lead paint - stripping/cleaning
- ☐ Lead sinker - manufacture
- ☐ Metal recycling
- ☐ Monumental work
- ☐ Radiator repair
- ☐ Shooting gallery
- ☐ Other (specify) :

☐ Smoker ☐ Ex- Smoker ☐ Non-Smoker

Controls

Wear gloves	☐ Yes	☐ No
Laundering by employer	☐ Yes	☐ No
Respirator use	☐ Yes	☐ No
Wash basins and showers (with hot and cold water)	☐ Yes	☐ No
Local exhaust ventilation	☐ Yes	☐ No
No smoking / eating in workshop	☐ Yes	☐ No
Overalls/ Work clothing	☐ Yes	☐ No
Dry sweeping	☐ Yes	☐ No
Hazardous substances training (including health effects)	☐ Yes	☐ No

Personal hygiene

Clean shaven	☐ Yes	☐ No
Shower & change into clean clothes at end of shift	☐ Yes	☐ No

5. BIOLOGICAL MONITORING RESULTS (AMP to complete)

Include previous two test results (if available) and attach copy of pathology laboratory results

	Dates yyyy to yyyy	Blood lead level (μg/dL)

7. RISK ASSESSMENT (AMP to complete) Indicate (X)

1. ☐ New to lead work.
2. ☐ New employee but with previous exposure to lead.
3. ☐ Current employee continuing in lead work.
4. Satisfactory personal hygiene ☐ Yes ☐ No
5. Satisfactory workplace controls ☐ Yes ☐ No
6. Clinical picture indicative of adverse health effects from lead
   ☐ Yes ☐ No ☐ Maybe

Comment:

8. RECOMMENDATIONS – AMP to complete (X) all relevant boxes

1. ☐ Suitable to work with lead
   - ☐ Review / Repeat blood lead level in months/ weeks.
2. ☐ Not suitable to work with lead
   - ☐ Remove from exposure to lead
   - ☐ Counselled employee
   - ☐ Informed employer to review and implement controls in workplace.
   - ☐ Medical examination within 7 days on
   - ☐ Review / Repeat test in months/ weeks.
   - ☐ Referral to medical specialist Appointment date
     - ☐ Occupational Physician ☐ Physician (specify)
3. ☐ Suitable to resume lead work after removal

Next review date:

Comments:

9. APPOINTED MEDICAL PRACTITIONER DETAILS

Name:	Date:
Signature:	
Telephone:	Email Address:
Medical Practice Address:	
Contact person:	

Checklist :

☐ **All sections of the form completed**
☐ **Attach Pathology Laboratory Report**

For information or assistance, contact:
Occupational Physician or Occupational Health Nurse, WorkSafe: 1300 307 877