

Your health and safety guide to Lead



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Prolonged lead exposure can have serious health effects and can severely diminish a person's quality of life.

Workers in a variety of industries can be exposed to lead in the workplace, including smelting and refining, radiator repair shops, battery manufacture and recycling, plastics, and ammunition and metal products manufacturing.

Lead can be inhaled or swallowed when a process generates lead dust, fumes or mists, and long-term exposure can cause a range of health problems, including gastrointestinal problems, kidney disease, infertility and nerve damage.

This guide will help you understand the risks, and will explain what you need to do to make your workplace safe.



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About the problem

What is a lead process?

Solid lead, in itself, presents little or no risk to people. However when lead is processed in a way that produces lead dust, fumes or mist (e.g. through grinding or heating), it can become a health risk.

Lead processes can include a wide range of activities, including:

- manufacturing dry lead compounds
- radiator repairs
- assembling, handling, repairing or dismantling batteries
- spraying, melting or casting lead alloys
- recovering lead from its ores or other compounds
- machine sanding or buffering surfaces coated in lead paint
- welding or cutting metal coated with lead
- spray painting with lead paint
- use of detonators or weapons
- foundry processes.

What are the health effects of lead?

Once absorbed into the body, lead can cause both immediate and long-term health problems.

High levels of lead in your body can cause headaches, tiredness, irritability, nausea, stomach pains and anaemia.

Continued exposure can cause far more serious symptoms, such as kidney damage, nerve and brain damage, paralysis, lead palsy and even death.

Lead exposure may also adversely affect the reproductive systems in both women and men. A developing unborn child is particularly at risk, especially in the early weeks before a pregnancy becomes known.

Your legal duties

The law

Occupational Health and Safety Act 2004 (OHS Act)

The OHS Act came into effect on 1 July 2005. It sets out the key principles, duties and rights in relation to occupational health and safety. The duties imposed by the Act cover a wide variety of circumstances, recognising the need for a duty-holder to have flexibility in determining what needs to be done to comply.

The OHS Act is based upon the following key health and safety principles:

- All people – employees and the general public – should have the highest level of protection against risks to health and safety.
- Those who manage or control things that create health and safety risks in the workplace are responsible for eliminating or reducing the risks, so far as is reasonably practicable.
- Employers should be proactive in promoting health and safety in the workplace.
- Information and ideas about risks and how to control them should be shared between employers and employees.
- Employees are entitled – and should be encouraged – to be represented in relation to health and safety issues.

Occupational Health and Safety Regulations 2007 (OHS Regulations 2007)

New Regulations for occupational health and safety came into effect on 1 July 2007.

The lead part of the OHS Regulations is intended to prevent illness and death resulting from over-exposure to airborne lead particles.

To do this, the Regulations impose specific legal responsibilities on employers and employees for the identification, monitoring and control of lead-risk tasks.



Employers

As an employer, you have a general duty to make your workplace safe, as well as specific duties in relation to lead exposure.

Control risk

You must ensure that employees are not exposed to airborne lead dust, fumes or mist in excess of the lead exposure standard.

As far as possible, you must also eliminate any remaining risk associated with lead exposure.

If it's not reasonably practicable to eliminate the risk, you must reduce the risk, as far as reasonably practicable, by:

- using a less harmful substance or a less harmful form of lead
- isolating the source of exposure from people
- using engineering controls.

If there is still a risk after using these methods, you should reduce it by using administrative controls and, if any risk still remains, reduce it with personal protective equipment.

You also have specific obligations to:

- ensure eating and drinking areas are separate from the lead process area
- provide personal protective clothing and equipment, as well as laundering
- provide appropriate changing and washing facilities.

You need to review (and, where necessary, revise) your risk controls if things change, if a person is removed from their job as a result of health surveillance results, or at the request of a health and safety representative.

You must consult employees and health and safety representatives when deciding on control measures.

Your legal duties continued

Identify lead-risk jobs

You must identify any lead-risk jobs done by your employees and notify WorkSafe. Once a lead-risk job has been identified, you must provide medical examinations and biological monitoring for any employees who do that work. Action must be taken if biological monitoring shows excessive blood lead levels and, at certain levels, employees must be immediately removed from their work.

Provide information

As an employer, you have a duty to provide information to employees regarding the risks and toxic effects associated with lead exposure, and the need for medical examinations and biological monitoring. This information must be provided to employees before they commence any work that involves a lead process.

Employees

Your employer is required to protect you from the risk of exposure to lead in the workplace.

At the same time, you must help to reduce the risk by not eating, drinking, smoking, chewing gum or carrying cigarettes or tobacco in a lead process area.

You must wash your hands and face after leaving any area where a lead process is carried out, and remove any contaminated clothing before entering an eating and drinking area.

You also have a general duty to take reasonable care for your own health and safety, and that of others who may be affected by your work, and to cooperate with your employer's efforts to make the workplace safe.

This may include following workplace policies and procedures, using equipment correctly, attending health and safety training, as well as helping to identify hazards and risks.



Compliance and enforcement

WorkSafe applies a strategy of ‘constructive compliance’ – a combination of incentives and deterrents – to improve workplace health and safety.

This strategy recognises that real and sustainable improvement in workplace health and safety requires active involvement from employers and employees in identifying hazards and controlling risks.

WorkSafe inspectors have the primary role of targeting unsafe workplace activity, enforcing compliance with health and safety laws, and providing guidance and advice on how to comply with those laws.

Further information on workplace inspections and WorkSafe’s enforcement policy is available through the WorkSafe Advisory Service (1800 136 089) or at www.worksafe.vic.gov.au

How to comply

WorkSafe has a range of guidance materials to advise on the required processes and actions that duty-holders must take in order to meet their legal obligations. *Compliance Codes, Health and Safety Solutions* and *Guidance Notes* each provide detailed and specific advice for duty-holders seeking to comply with the OHS Regulations. See also the enclosed *More information* sheet for a listing of guidance materials related to Lead.

Consult

Employees' expertise can make a significant contribution to improving workplace health and safety.

Regular, proactive consultation can help identify issues in the workplace and build a strong commitment to health and safety by including all views in the decision-making process.

Under the OHS Act, employers must consult with employees when identifying and assessing hazards or risks involved in working with lead, and making decisions about risk control.

'Employees' includes independent contractors (and any employees of the independent contractor(s)) who perform work which the employer has, or should have, control over.

If employees are represented by health and safety representatives, the consultation must involve those representatives – see *Your health and safety guide to Consultation* for further information.



Find

In order to ensure any lead process you carry out is safe, you need to consider how employees could be exposed to lead as part of their work.

The amount of lead that enters the body is likely to increase the longer and more often an employee is exposed to lead-containing dust, fumes or mist.

You should consider:

- information obtained about the lead-containing substance or lead process
- the quantities of lead used
- how long and how often an employee is working in the lead process
- whether employees are working directly with the substance or could come into contact with contaminated surfaces
- employee health records.

If you are uncertain about the level of exposure, you should carry out atmospheric monitoring. This will provide information about the amount of lead in the air that could be breathed in by your workers.

Biological monitoring, however, is the most effective way of measuring the amount of lead actually absorbed by an employee. Biological monitoring measures the amount of lead in a person's body, and therefore takes account of lead exposure through both inhalation and ingestion.

If work in a lead process is reasonably likely to cause blood lead levels to exceed 0.48 $\mu\text{mol/L}$ for female employees of reproductive capacity or 1.45 $\mu\text{mol/L}$ for all other employees, you need to identify the task as a lead-risk job and take certain steps as set out in the Regulations.

How to comply continued

Fix

Work through the following list to control lead exposure risks. In many instances, a combination of approaches will result in the best solution.

1. Eliminate the cause of the risk

The best option is to remove the lead substance or process completely, so you should always try to do this first.

Example: Use aluminium radiators with plastic tanks rather than copper-core car radiators with soldered tanks.

2. Use a safer substance or a safer form of lead, use engineering controls or isolate the lead process from people

If you can't remove the hazard, think about changing the equipment or processes that are used.


Example: Use a lead-based glaze in a water slurry form instead of a powder form to reduce the generation of lead dust.

3. Use administrative controls or personal protective equipment

If you can't change the equipment or processes, try to change the way the work is done.

Example: Implement an employee rotation system to reduce the amount of time each worker is exposed.

You also need to ensure that employees are not exposed to lead in excess of the exposure standard and you should use atmospheric monitoring and biological monitoring to help you determine the risk.



There are further measures you should take to control the risks associated with the use of lead in your workplace. Some examples include:

- confining the lead to the area where the process is being carried out by doing things such as enclosing lead waste in containers and using ventilation systems with collection units
- regularly cleaning all lead process areas by using a vacuum cleaner fitted with a HEPA filter or by using wet cleaning methods (such as mopping and wet wiping)
- providing an eating and drinking area that cannot be contaminated by lead
- providing changing and washing facilities
- arranging for laundering of protective clothing that has been contaminated by lead dust.

Review

It's important to review your risk controls regularly to ensure they are implemented correctly and to monitor their effectiveness.

You need to review (and, if necessary, revise) your risk controls whenever any changes are made to the workplace that could increase risks, such as changes to the lead process or the way work is done.

A review is also necessary if a person is removed from their job as a result of health surveillance results, or if a health and safety representative requests one.

GLOSSARY

Atmospheric testing/monitoring – The collection and analysis of air samples to determine the concentration of lead in the air. Air quality is tested against the *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment*.

Biological monitoring – A process for determining the amount of lead in capillary or venous blood and related measurements as required. Biological monitoring is a form of health surveillance.

Blood lead level – The concentration of lead in whole blood expressed in micromoles per litre ($\mu\text{mol/L}$) or micrograms per decilitre ($\mu\text{g/dL}$).

Employee – A person employed under a contract of employment or contract of training.

Employer – A person who employs one or more people under contracts of employment or contracts of training.

Exposure standard – An airborne concentration of a particular substance in a person's breathing zone as established by the National Occupational Health and Safety Commission's *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:1003(1995)].

Hazard – A potential source of harm or injury. The potential to cause injury, illness or disease.

Health and safety representative (HSR) – A member of a designated work group elected to represent employees on matters relating to occupational health and safety.

Health surveillance – Monitoring of an individual's health to identify changes in their physical well-being following exposure to a hazardous substance, including biological monitoring but not including the monitoring of atmospheric contaminants.

Lead process – Processing of lead compounds which may pose a health risk through exposure to dangerous lead particles, either by manipulation of solid lead or use of materials containing traces of lead. Lead processes are defined in Schedule 1 and Schedule 2 of the *National Standard for the Control of Inorganic Lead at Work* [NOHSC:1012(1994)].

Lead-risk job – Any task in which the blood lead level of the employee is reasonably likely to rise above an acceptable level ($1.45 \mu\text{mol/L}$; or $0.48 \mu\text{mol/L}$ for female employees of reproductive capacity).

Personal protective equipment – Equipment or clothing used to provide protection, e.g. gloves, safety glasses, hard hats, goggles, earmuffs, safety shoes, respirators and fall arrest systems.

Plant – Any machinery, equipment, appliance, implement or tool; any component of any of these things; and anything fitted, connected or related to any of these things.

Reasonably practicable – See section 20(2) of the OHS Act and the WorkSafe Position on *How WorkSafe applies the law in relation to reasonably practicable*.

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- Your health and safety guide to controlling OHS hazards and risks
- Your health and safety guide to licensing and registrations
- Your health and safety guide to workplace amenities and first aid

Visit www.worksafe.vic.gov.au for online guidance on all of these topics and more...

The information presented in *Your health and safety guide to lead* is intended for general use only. It should not be viewed as a definitive guide to the law, and should be read in conjunction with the *Occupational Health and Safety Act 2004*.

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