



Review of hazards and health effects of inorganic lead

INFORMATION SHEET

Exposure to lead has the potential to cause adverse health effects to exposed workers. In the past few decades an increasing amount of research has been published on the topic of lead toxicity.

The removal of lead from petrol and paint within Australia has significantly reduced background levels and concerns for some workers previously exposed to inorganic lead at work. However, workers continue to be subject to chronic exposure to lead in a number of industries.

What does the law currently require?

The model Work Health and Safety (WHS) Regulations require a person conducting a business or undertaking (PCBU) to immediately remove a worker from carrying out lead risk work if, following health monitoring, blood lead removal levels (BLRL) for the worker are at or greater than:

- 50 µg/dL for females not of reproductive capacity and males
- 20 µg/dL for females of reproductive capacity, and
- 15 µg/dL for females who are pregnant or breastfeeding

The current workplace exposure standard for inorganic lead (8 hour time-weighted average) is 0.15 mg/m³ (inhalable).

A PCBU has a primary duty to ensure, so far as is reasonably practicable, workers and other people are not subjected to risks arising from lead exposure.

Review of potential health risks

Safe Work Australia is reviewing the workplace BLRLs and the associated workplace exposure standard (WES) for lead.

To establish the latest information on health effects of lead, Safe Work Australia commissioned a report by ToxConsult Pty Ltd entitled *Review of hazards and health effects of inorganic lead – implications for WHS regulatory policy*. The report examines the health effects of exposure to lead and based on the analysis, advises on appropriate BLRLs and a WES for lead.

This research report will form the evidence base for a consultation Regulation Impact Statement (RIS).

Report findings and recommendations

The report finds the current BLRLs contained within the model WHS Regulations are not sufficiently protective of the health of workers in lead risk work and adverse health effects may occur at those levels. It proposes changes to the BLRLs. The report also proposes changes to the WES for inorganic lead because blood lead levels are influenced by levels of lead in air and this is an important hazard control measure.

The report proposes the following:

- For women of non-reproductive capacity and men two options are suggested:
 - a. BLRL of 20 µg/dL, or
 - b. Target Blood lead of 20 µg/dL and BLRL of 30 µg/dL.
- For women of reproductive capacity a BLRL of 10 µg/dL is recommended.
- To help achieve these BLRLs it is suggested the WES be reduced from 0.15 mg/m³ to 0.05 mg/m³.

Furthermore, the importance of high standards of occupational hygiene is stressed.

Reducing blood lead removal levels

The report indicates that lowering the BLRL for males from 50 µg/dL to 30 or 20 µg/dL could:

- reduce cancer risk for a large proportion of men who work in 'scheduled' lead jobs and currently have blood lead > 30 µg/dL
- reduce cardiovascular disease, and
- reduce potential sperm quality damage.

For women of reproductive capacity, lowering the BLRL from 15 or 20 to 10 µg/dL could:

- lower risk of detrimental intellectual development to the foetus, and
- lower risk of spontaneous abortion.

Reducing the workplace exposure standard for lead

At exposure levels equal to the current WES of 0.15 mg/m³ the nominated BLRL of 30 µg/dL would likely be achieved in less than 50% of workers. The report recommends the WES be reduced. Anecdotal evidence suggests that the mining industry and other users of lead are currently achieving lower levels of exposure than the current WES.

The report concludes a WES of 0.05 mg/m³ would be compatible with a BLRL of 30 µg/dL. At an exposure level of 0.05 mg/m³, data indicates that significantly more than half of workers in lead related jobs would have a BLRL below 30 µg/dL. The report comments that workplaces with very good occupational hygiene could further achieve reductions in exposure.

What if no action is taken?

The report concludes that if no action is taken, the BLRLs and WES for lead:

- are not consistent with recommendations of many committees of scientific and medical experts
- do not reflect the current toxicological and epidemiological knowledge of the risks of lead
- do not promote good practice in health and safety measures into the Australian workplace.

Further consultation

As a next step, Safe Work Australia will consult with business on the impact of the proposed regulatory changes.

This report will inform a consultation RIS on proposed changes.

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