Australian Government
National Health and Medical Research Council

NHMRC STATEMENT: EVIDENCE ON THE EFFECTS OF LEAD ON HUMAN HEALTH

A blood lead level greater than 5 micrograms per decilitre suggests that a person has been, or continues to be, exposed to lead at a level that is above what is considered the average 'background' exposure in Australia*.

NHMRC recommends that if a person has a blood lead level greater than 5 micrograms per decilitre, the source of exposure should be investigated and reduced, particularly if the person is a child or pregnant woman.

Individuals should have their blood lead level tested if there is a reason to suspect they have swallowed or breathed lead from a particular source (more than the very small amounts in most people's everyday environments); or someone in their household has had a blood test that showed a level greater than 5 micrograms per decilitre; or they have unexplained health problems that could be due to lead.

This Statement updates previous work by NHMRC and is based on the findings of a comprehensive independent assessment of the scientific evidence on the effects of lead on human health, which is summarised in the *NHMRC Information Paper: Evidence on the Effects of Lead on Human Health*.

Lead and lead compounds are not beneficial or necessary for human health, and can be harmful to the human body. Peoples' exposure to lead in Australia has substantially reduced in recent decades due to national initiatives which have restricted the addition of lead to paint and petrol, and the use of lead in consumer goods (e.g. toys, cosmetics and cans). The average blood lead level among Australians is now estimated to be less than 5 micrograms per decilitre. This level is likely to decrease further over time as the presence of lead in the environment continues to reduce.

Health effects as a result of lead exposure differ substantially between individuals. Factors such as a person's age, the amount of lead, whether the exposure is over a short-term or a longer period, and the presence of other health conditions, will influence what symptoms or health effects are exhibited. Lead can be harmful to people of all ages, but the risk of health effects is highest for unborn babies, infants and children.

It is well established that blood lead levels greater than 10 micrograms per decilitre can have harmful effects on many organs and bodily functions. Effects such as increased blood pressure, abnormally low haemoglobin, abnormal kidney function, long-term kidney damage and abnormal brain function have been observed at blood lead levels between 10 micrograms and 60 micrograms per decilitre in adults and children. Encephalopathy, and death in some cases, can occur at blood lead levels of 100-120 micrograms per decilitre in adults and 70-100 micrograms per decilitre in children.

The evidence for health effects occurring as a result of blood lead levels less than 10 micrograms per decilitre is less clear. NHMRC's comprehensive review of the health effects of lead found an association between blood lead levels less than 10 micrograms per decilitre and health effects, including reduced Intelligence Quotient and academic achievement in children, behavioural problems in children, increased blood pressure in adults and a delay in sexual maturation in adolescent boys and girls. However, there is insufficient evidence to conclude that lead at this level *caused* any of the health effects observed.

Reducing the amount of lead in the environment (e.g. in soil, dust, air and products) as much as possible will reduce the risk of harm from lead exposure, especially for young children and unborn babies. Health authorities in Australian states and territories should continue to focus on identifying people who have been exposed to more lead rather than the trace 'background' amounts typically found in the everyday environments of most communities. Identifying and controlling the source of lead exposure will reduce the risk of harm to the individual and to the community.

*In communities that are at risk of lead exposure due to industry (e.g. lead mining or smelting), health authorities should continue to run programs to monitor and reduce lead exposure.

Further information can be found in the NHMRC Information Paper and on the NHMRC website at:
www.nhmrc.gov.au/health-topics/review-lead-exposure-and-health-effects-australia