



**Queensland Government**  
Queensland **Health**

# **Blood Lead Notifications**

**in**

**Queensland**

**2002**

### Background

Exposure to lead can be a significant population health problem. It can affect the health of children, unborn babies and adults occupationally and non-occupationally.

Children under the age of five are at greatest risk. This is because:

- the brain in young children is still maturing and appears to be more vulnerable to lead
- the exploratory hand-to-mouth activity of children places them at higher risk of ingesting lead from a contaminated environment
- children absorb a much higher proportion of ingested lead than adults (40 to 50% compared to 3 to 10% for adults).

Population-based epidemiological studies have found elevated exposure to lead in early childhood to be associated with impaired cognitive development. Symptoms of high blood lead levels may include reduced attention span, reduced spatial skills, poorer performance at school, constipation, abdominal colic and behavioural problems. However, unless levels are significantly elevated, children with high blood lead are usually asymptomatic.

Exposure to lead in pregnancy can affect the unborn baby. Complications from high levels of exposure include premature birth, low birth weight, miscarriage and stillbirth. The baby may also suffer impaired learning and cognitive development.

Symptoms in adults, if any, depend on the level of exposure. High levels can cause joint and muscle pain, muscle cramps, anaemia, nausea, constipation, colicky abdominal pain, sleep problems, reduced concentration and headaches. At very high levels, lead may cause encephalopathy (ie. a disease of the brain) and convulsions. Lengthy high level exposure to lead can be associated with chronic renal damage.

Elevated blood lead levels are notifiable in Queensland. Distinction is made between occupational and non-occupational exposure when determining whether a blood lead level is notifiable. The criteria for notification are:

- demonstration of a blood lead level of 0.73  $\mu\text{mol/L}$  ( $\sim 15 \mu\text{g/dL}$ ) and greater in any person **not** known to be occupationally exposed to lead, **or**
- demonstration of a blood lead level of 2.41  $\mu\text{mol/L}$  ( $\sim 50 \mu\text{g/dL}$ ) and greater in any person known to be occupationally exposed to lead.

Pathology laboratories or the employer notify Queensland Health when a blood lead level meets the notification criteria. In association with the attending medical practitioner, an attempt is then made to identify the source of exposure. Ambient air, paint, soil and dust, water, food, cosmetics, traditional medicines and occupational environments are all considered. The follow-up of children with a blood lead level of 0.73  $\mu\text{mol/L}$  ( $\sim 15 \mu\text{g/dL}$ ) and greater may involve an inspection of the local environment of their home. Environmental sampling may be carried out in this case. The case, parent or guardian are advised of the nature of the condition and potential or identified sources of exposure. Advice on how to reduce exposure is offered. Follow-up testing of the blood lead level is recommended to ascertain the effectiveness of implemented exposure control measures.

### Methods

The following report is an analysis of the 2002 data on notifiable cases of blood lead levels from the Notifiable Conditions System (NOCS) that is held and maintained by Queensland Health. The Statistical Package for Social Sciences (SPSS) version 12.0 software was used to analyse the data.

### Results

In 2002, there was a total of 47 notifications in Queensland. Seventy-nine per cent of these were male. Ages ranged from one to 74 with a median of 39 years. Thirty per cent of notifications were aged below 20 years, with more than half of these (57%) aged below five years.

Brisbane was the statistical division with the highest proportion of notifications (49% of all notifications). All other divisions had substantially fewer notifications, with Moreton (13%) Wide Bay – Burnett (11%) and Fitzroy (11%) having the next highest proportions.

Twenty-six per cent of notifications were occupationally exposed, all of which were males. Sixty-six per cent of notifications were non-occupationally exposed. In two per cent the source of exposure was unknown, and for six per cent no determination of occupational or non-occupational exposure was recorded. The most common identified source of exposure among those occupationally exposed was battery manufacturing (50% of occupationally exposed cases). The most common identified source of exposure among those non-occupationally exposed was removal of lead-based paint from domestic buildings (50% of non-occupationally exposed cases). This was also the most common identified source of exposure overall (26% of all cases). Intentional ingestion of lead-based material was also a common exposure among those non-occupationally exposed (41% of non-occupationally exposed cases). Only six per cent of notifications did not have a source of exposure recorded, although for a further six per cent the source could not be identified.

Blood lead levels for non-occupationally exposed notifications ranged from 16 to 102 µg/dL. Blood lead levels for occupationally exposed notifications ranged from 50 to 67 µg/dL. For six per cent of cases a blood lead level was not recorded.

### Discussion

The number of high blood lead notifications has decreased from 2000 and 2001 (47 compared to 86 and 80 respectively).

The most common profiles among this data set were adults exposed while renovating a domestic building and children exposed by ingesting lead-based material. There were no females who were occupationally exposed.

There was little missing data in this data set. Only six per cent of cases did not have a blood level, source of exposure and occupational versus non-occupational exposure recorded. Three cases who did not meet notification criteria were removed from the data set prior to analysis.

This analysis indicates that the public health focus for elevated blood lead levels should be to make the general public aware of the dangers of lead exposure whilst renovating old homes and the precautions they should take in this circumstance. In particular, measures should be adopted to prevent children from ingesting paint or other lead-based materials whilst renovation is occurring.