



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

# **Blood Lead Notifications**

**in**

**Queensland**

**2004**

### 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
- 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  $\mu\text{mol/L}$  (~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  $\mu\text{mol/L}$  (~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  $\mu\text{mol/L}$  (~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.

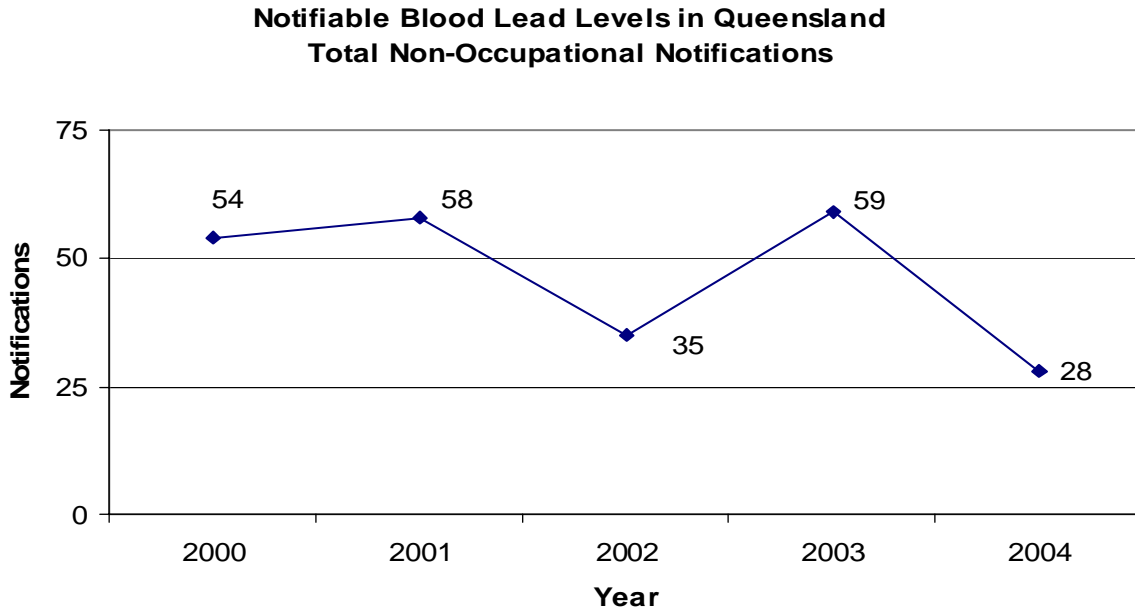
### Methods

The following report is an analysis of the 2004 data on notifiable cases of blood lead levels from the Notifiable Conditions System (NOCS) that is held and maintained by Queensland Health. Microsoft Excel was used to analyse the data. Notifications where the occupational status was unknown were excluded from the analysis, of which there was one in 2004.

## Part A: Non-Occupational Blood Lead Notifications in 2004

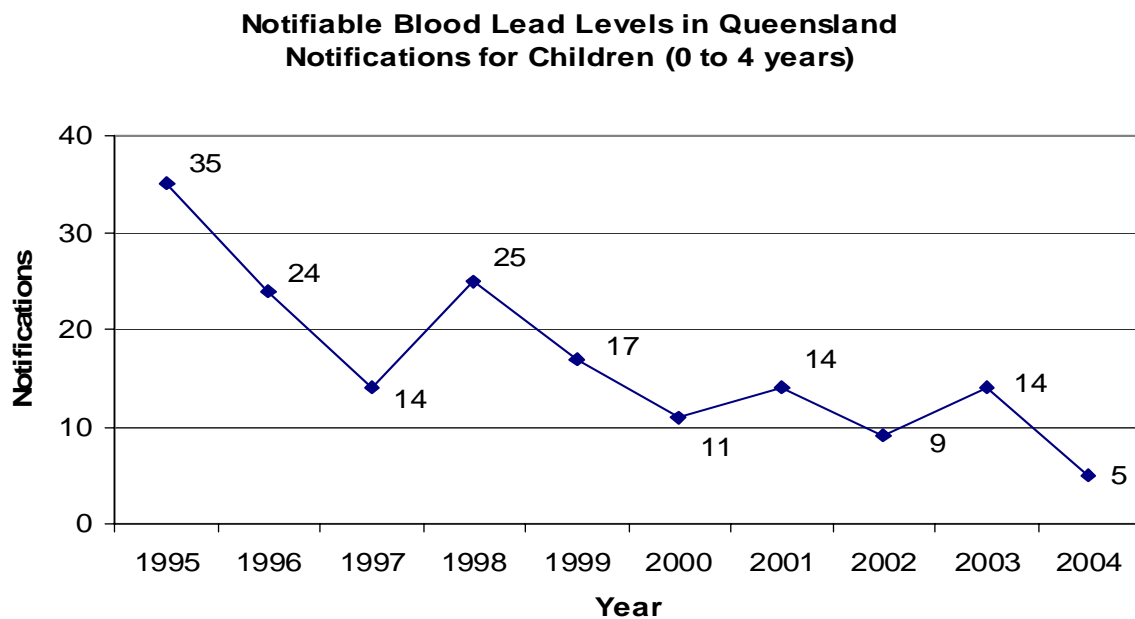
### Total notifications

- Total non-occupational notifications declined significantly from the previous year.



### Child notifications (0 to 4 years)

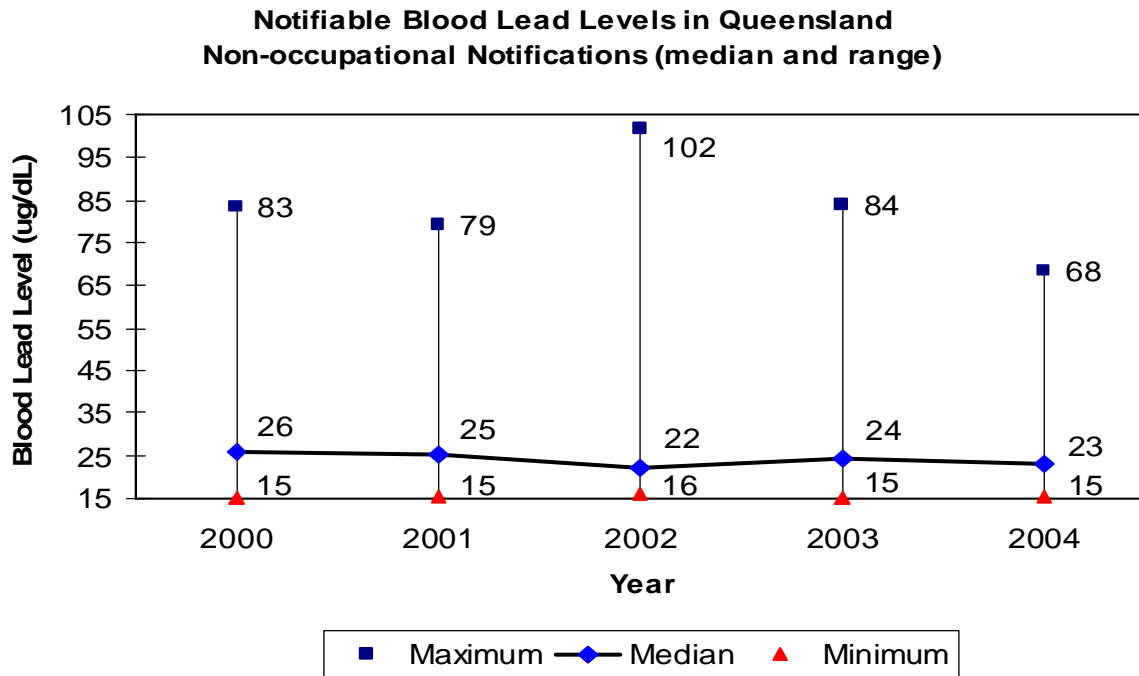
- Five children (representing 18% of total non-occupational notifications) aged 0 to four years had notifiable blood lead levels in 2004. The number of notifications in 2004 was significantly lower than recorded in the previous nine years.



**Blood lead levels**

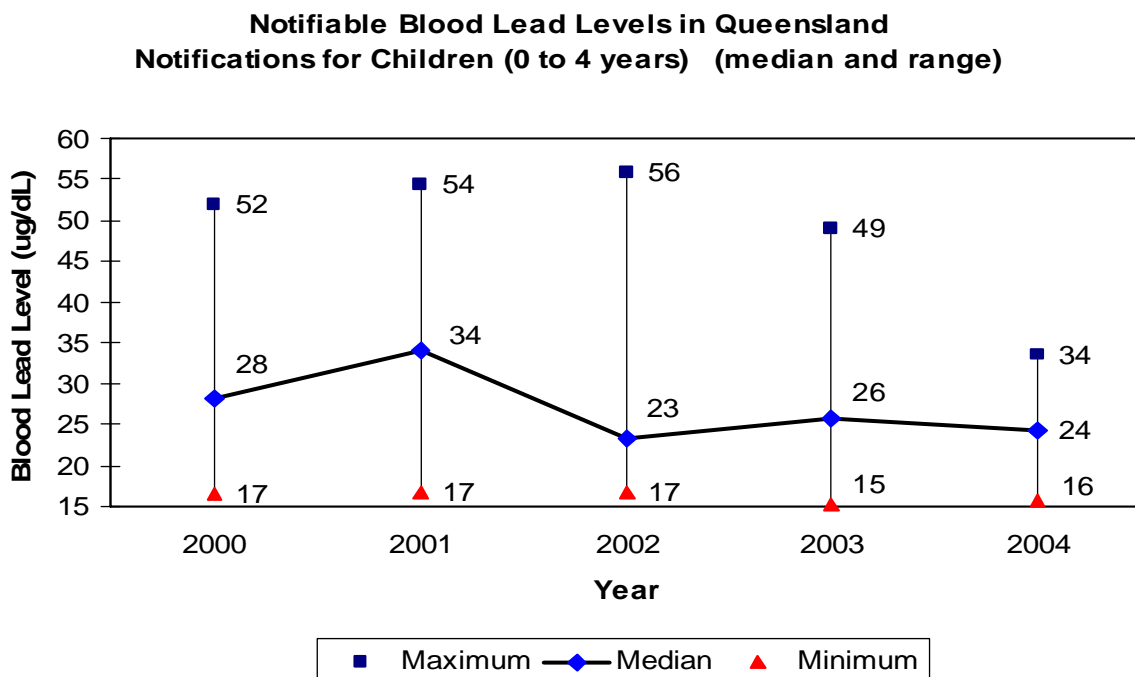
*Total non-occupational notifications*

- Median blood lead levels appear to have plateaued. The range of blood lead levels was lower than recorded in the previous four years.



*Child notifications (0 to 4 years)*

- Median blood lead levels appear to have plateaued. The range of blood lead levels was noticeably lower than recorded in the previous four years.



**Age range**

- In 2004, ages ranged from one to 74 years.

**Gender**

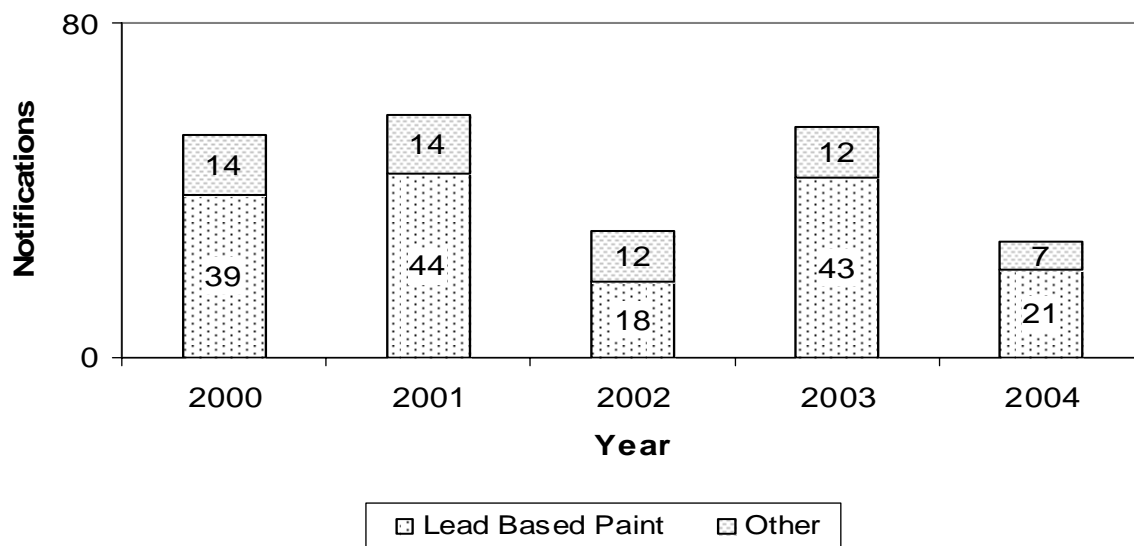
- 19 notifications (68%) were males.

Note: The blood lead level criteria for notification in Queensland is the same for males and females and does not differentiate for females of reproductive capacity or who are pregnant or breast feeding.

**Causes**

- 21 notifications (75%) were caused through exposure to lead paint.
- The next most common cause of exposure was at a rifle range (three notifications or 11%).

**Notifiable Blood Lead Levels in Queensland  
Non-occupational Notifications by Cause**



**Location**

- Six notifications (21%) were from the Brisbane south region (other than the Gold Coast Population Health Unit and the Darling Downs Population Health Unit).
- Notifications continued to decline in the Brisbane North Population Health Unit.

Population Health Unit	2000	2001	2002	2003	2004
Brisbane North	10	11	10	4	2
Brisbane south region (other than Gold Coast and Darling Downs)	19	13	6	25	6
Cairns	1	7	0	3	0
Darling Downs	3	1	1	3	4
Gold Coast	3	3	3	0	3
Rockhampton	7	7	5	8	5
Sunshine Coast	0	9	1	5	0
Townsville	8	2	5	8	5
Wide Bay	3	5	4	3	3

### Key Findings for Non-Occupational Notifications in 2004

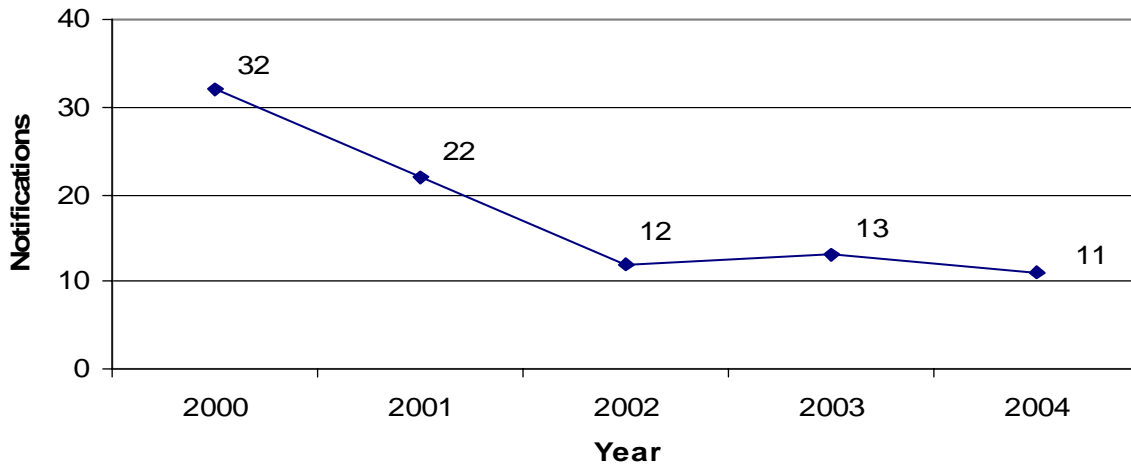
- Total notifications in 2004 decreased significantly from the previous year and were lower than recorded in the previous four years.
- The number of notifications for children aged 0 to four years in 2004 was lower than recorded in the previous nine years.
- The median blood lead levels for total non-occupational notifications and child notifications (0 to 4 years) in 2004 appear to have plateaued.
- The most common cause (75%) of exposure for non-occupational notifications was from lead based paint.
- The most common location (21%) for notifications was the Brisbane south region.

**Part B: Occupational Blood Lead Notifications in 2004**

**Total notifications**

- Occupational notifications have declined significantly since 2000.

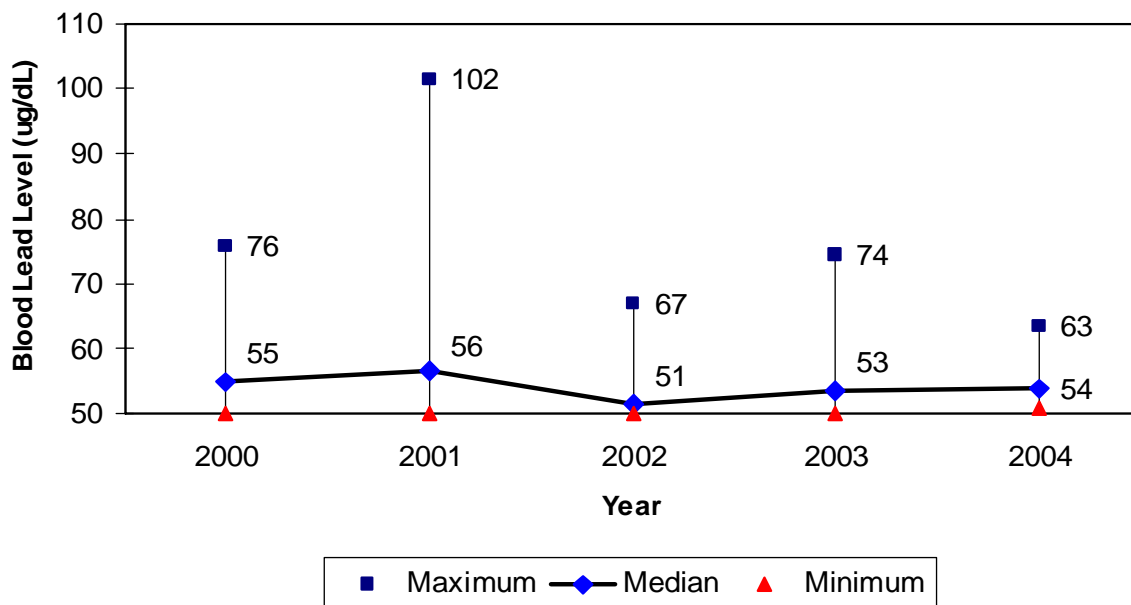
**Notifiable Blood Lead Levels in Queensland  
Total Occupational Notifications**



**Blood lead levels**

- Median blood lead levels remain close to the notification criteria level of 50 ug/dL. The range of blood lead levels was lower than recorded in the previous four years.

**Notifiable Blood Lead Levels in Queensland  
Occupational Notifications (median and range)**



**Age range**

- Ages ranged from 19 to 52 years.

**Gender**

- All notifications were males (Note: The blood lead level criteria for notification in Queensland is the same for males and females and does not differentiate for females of reproductive capacity or who are pregnant or breast feeding.)

**Causes**

- Battery manufacturers were the most common cause of occupational exposure in 2004.

<b>Cause of lead exposure</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
Battery manufacturers	5	3	6	3	6
Foundry	5	1	1	0	0
Indoor/ outdoor rifle range	1	5	3	0	0
Mines	11	2	1	1	3
Lead concentrate (except batteries/mines)	0	0	0	3	0
Radiator manufacture, repair or maintenance	2	2	0	2	0
Removal of paint from domestic buildings	8	7	1	2	1
Removal of paint other structures (eg. boat, bridge)	0	0	0	1	1
Fire assay laboratory	0	1	0	0	0
Unknown source of exposure	0	1	0	1	0

**Location**

- Brisbane south region and Townsville Population Health Unit were the most common location for notifications, accounting for all but one notification in 2004.

<b>Population Health Unit</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
Brisbane North	3	3	0	0	0
Brisbane south region (other than Gold Coast and Darling Downs)	13	7	7	9	6
Cairns	0	0	1	0	0
Darling Downs	0	0	0	0	1
Gold Coast	1	5	2	2	0
Rockhampton	1	1	0	0	0
Sunshine Coast	1	2	1	1	0
Townsville	13	4	1	1	4
Wide Bay	0	0	0	0	0

**Key Findings for Occupational Notifications in 2004**

- Total notifications in 2004 were lower than recorded in the previous four years.
- Median blood lead levels remain close to the notification criteria level of 50 ug/dL.
- The most common cause of occupational exposure was from battery manufacture.
- The most common location (55%) for notifications was the Brisbane south region.