



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

**Blood Lead Notifications**  
**in**  
**Queensland**  
**2003**

### 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  $\mu\text{mol/L}$  ( $\sim 15 \mu\text{g/dL}$ ) 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.

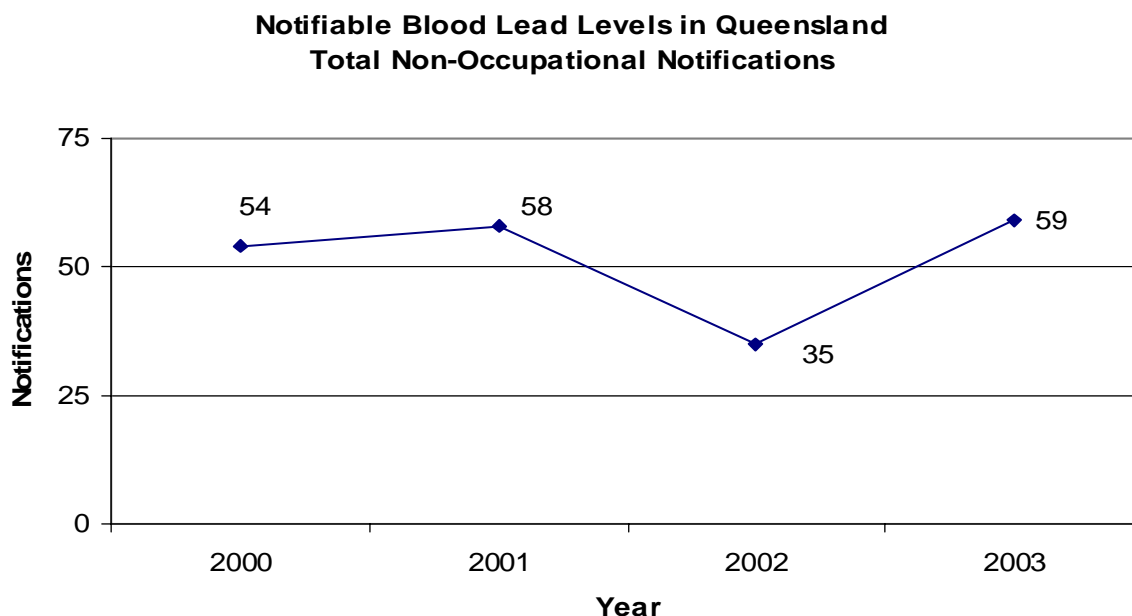
### Methods

The following report is an analysis of the 2003 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 were two in 2003.

## Part A: Non-Occupational Blood Lead Notifications in 2003

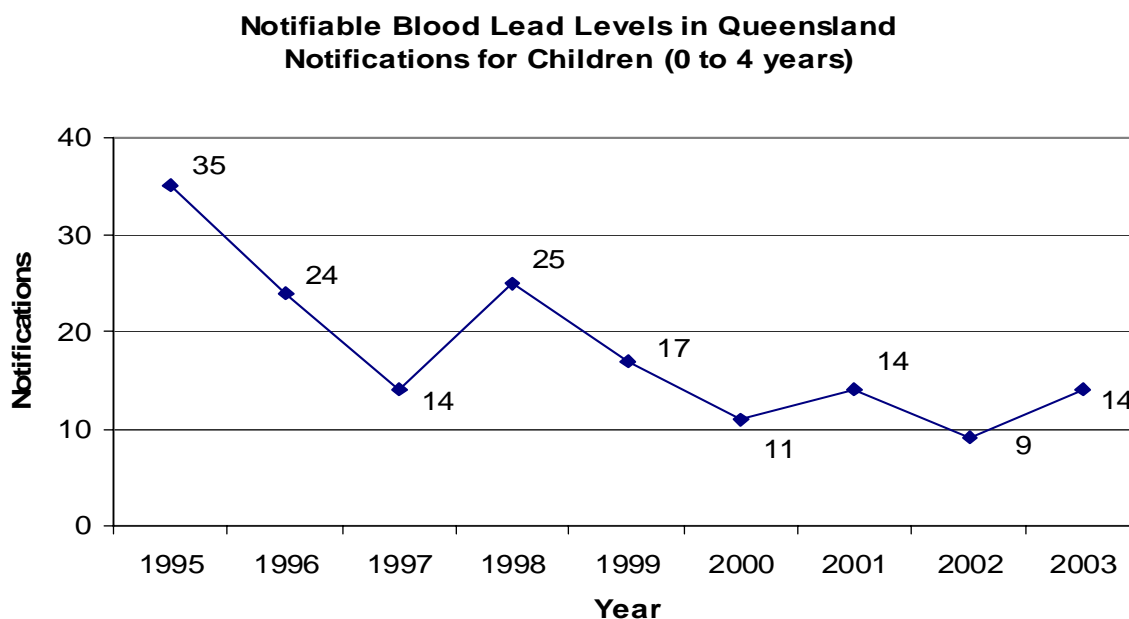
### Total notifications

- There were 59 non-occupational notifications in 2003.



### Child notifications (0 to 4 years)

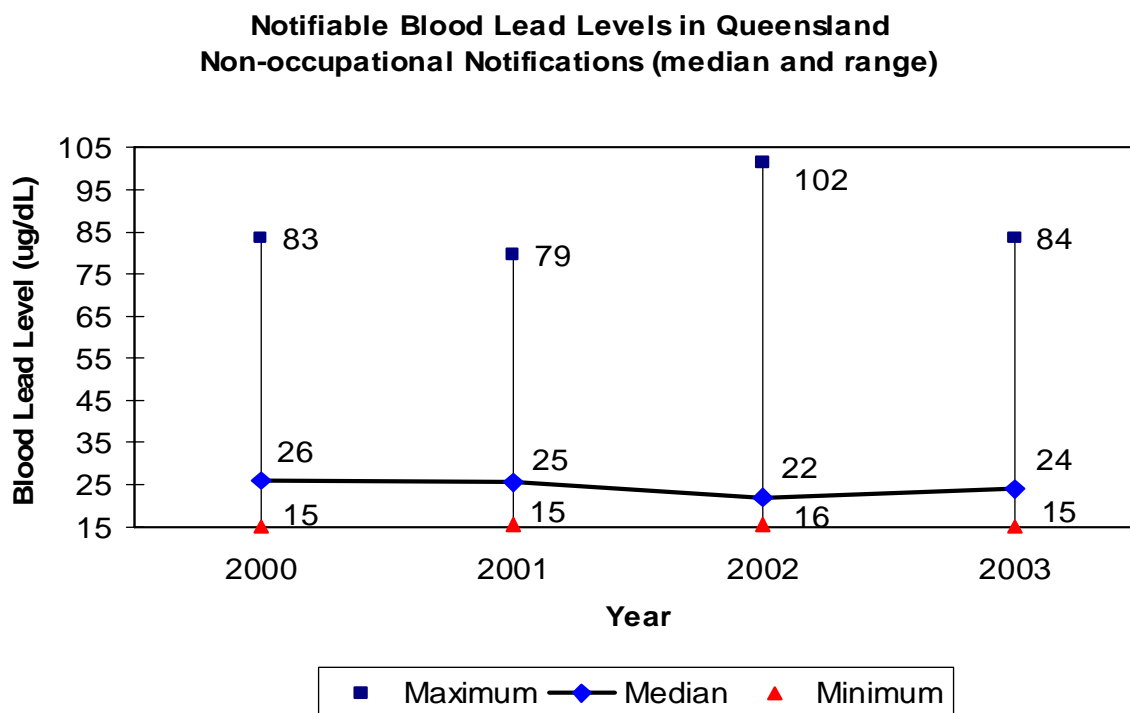
- Fourteen (14) children (representing 24% of total non-occupational notifications) aged 0 to four years had notifiable blood lead levels in 2003. While there were five more notifications compared to the previous year, there were significantly fewer notifications than in the latter 1990's.



## Blood lead levels

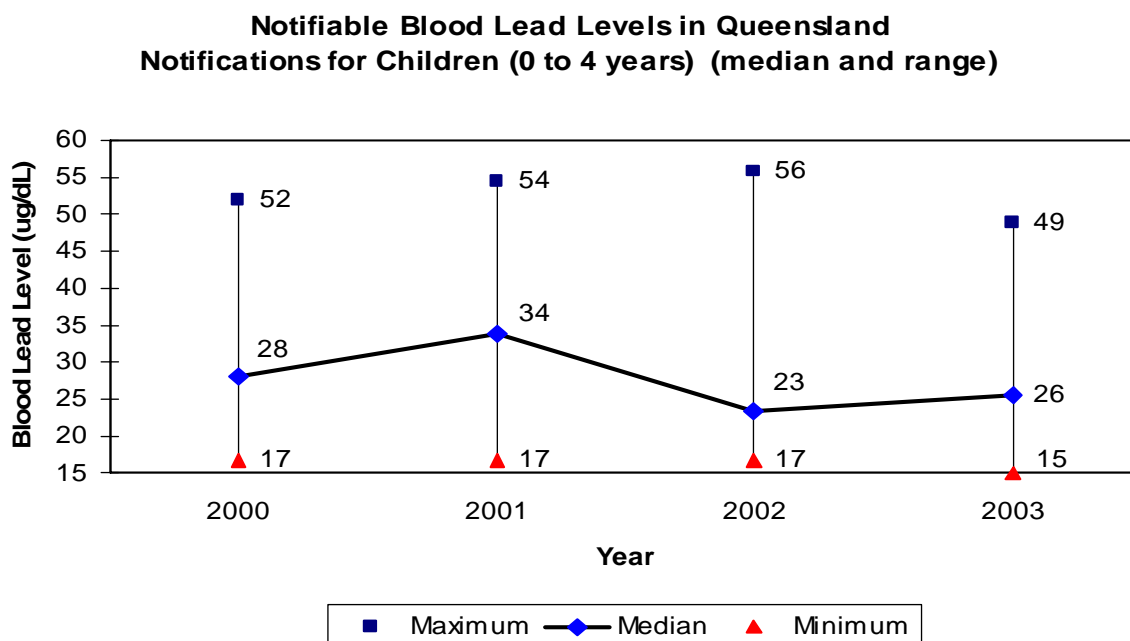
### Total non-occupational notifications

- Median blood lead levels appear to have plateaued. The range of blood lead levels in 2003 decreased on the previous year.



### Child notifications (0 to 4 years)

- Median blood lead levels increased marginally on the previous year. The range of blood lead levels decreased slightly on previous years.



### Age range

- In 2003, ages ranged from six months to 79 years.

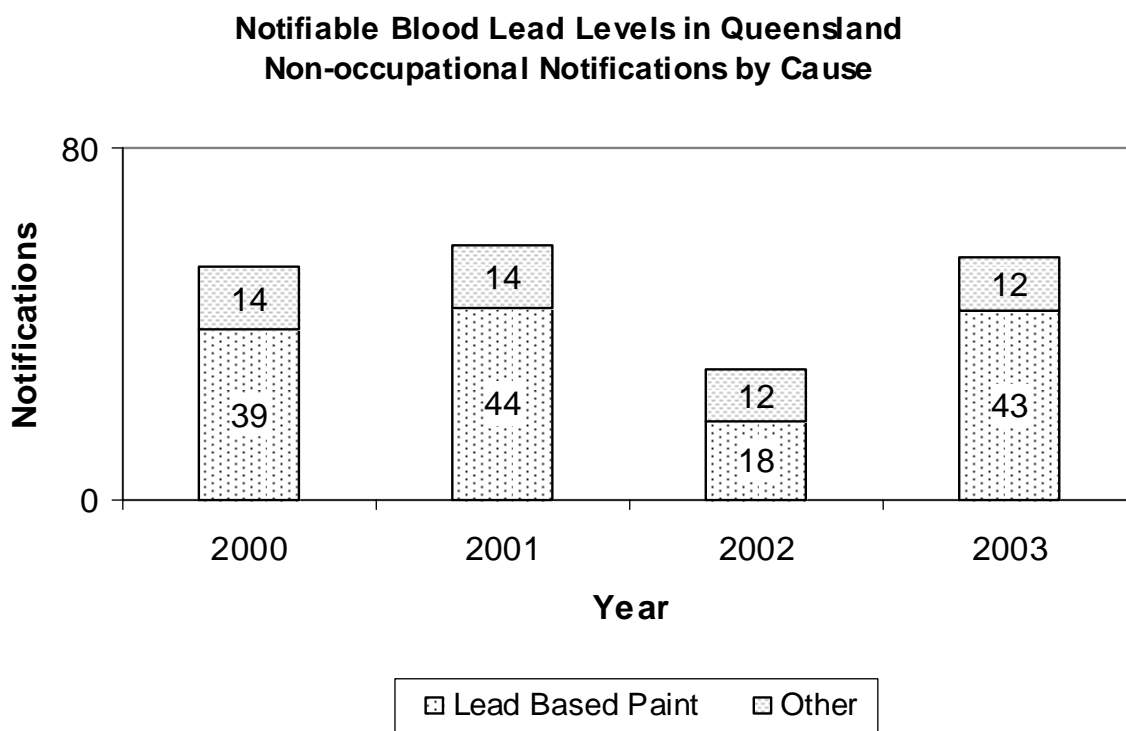
### Gender

- Forty-two notifications (71%) 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

- 43 notifications (73%) were caused through exposure to lead paint.
- The next most common cause of exposure was at a rifle range (four notifications or 7%) and making lead sinkers / toy soldiers (three notifications or 5%).
- In four notifications the cause of exposure was not determined.



**Location**

- 25 notifications (42%) were from the Brisbane south region (other than the Gold Coast Population Health Unit and the Darling Downs Population Health Unit).
- There was a noticeable decline in notifications (about 50% drop) from Brisbane North Population Health Unit on previous years.

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

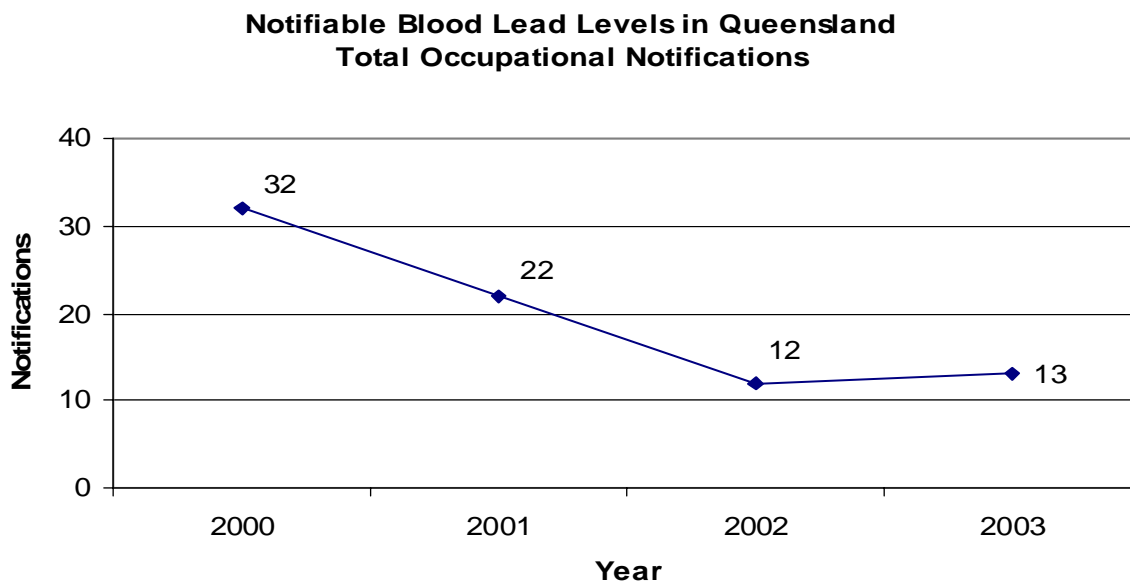
**Key Findings for Non-Occupational Notifications in 2003**

- Total notifications in 2003 increased to levels previously recorded in 2000 and 2001.
- The number of notifications for children aged 0 to four years in 2003 remains low and is noticeably less than recorded in 1995, 1996 and 1998.
- The median blood lead levels for total non-occupational notifications and child notifications (0 to four years) in 2003 remains similar to the previous year.
- The most common cause (73%) of exposure for non-occupational notifications was from lead based paint.
- The most common location (42%) for notifications was the Brisbane south region.

## Part B: Occupational Blood Lead Notifications in 2003

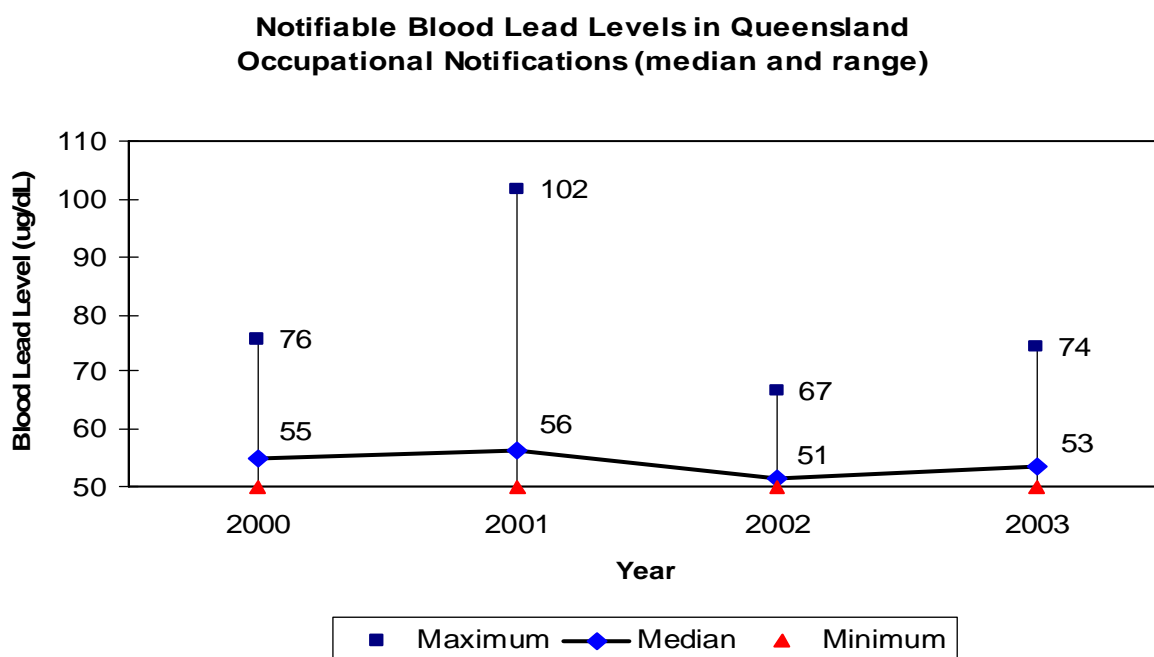
### Total notifications

- Occupational notifications have declined significantly since 2000.



### Blood lead levels

- Median blood lead levels remain close to the notification criteria level of 50  $\mu\text{g/dL}$ . The range of blood lead levels has decreased significantly from 2001 to levels similarly recorded in 2000 and 2002.



**Age range**

- Ages ranged from 27 to 73 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**

- There was no cause of occupational exposure in 2003 that was particularly prevalent.

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

**Location**

- Nine out of 13 notifications (69%) occurred in the Brisbane south region (other than the Gold Coast Population Health Unit and the Darling Downs Population Health Unit).

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

**Key Findings for Occupational Notifications in 2003**

- Total notifications in 2003 were significantly lower than those recorded in 2000 and 2001.
- Median blood lead levels remain close to the notification criteria level of 50 ug/dL.
- The most common location (69%) for notifications was the Brisbane south region.