

Non-occupational lead absorption notifications

This report presents data on non-occupational lead absorption notifications and notifications with unknown lead sources entered into the Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) from 2014–2023.

Key facts

- Lead absorption notification rates remained high for adults in 2023, but rates for children aged 0–14 years decreased.
- Lead-based paint was the most common source of exposure, accounting for 27% of notifications since 2014.
- Males aged 65–74 years had higher lead notification rates than males in other age groups.
- The Whanganui district had the highest lead notification rates in 2021–22 and 2022–23.

Lead absorption investigation guidelines

Although no safe level of exposure to lead has been found, the blood lead levels required to be notified in New Zealand are lead absorption equal to or in excess of 0.24 µmol/L. At and above this level, public health intervention is required for children and non-occupationally exposed adults.

Public health intervention and investigation of sources and pathways is dependent on the blood lead level of the individual as set by [Te Whatu Ora – Health New Zealand](#) (2024):

Blood lead level	Lead absorption investigation guidelines
0.24–0.47 µmol/L	Investigate sources, particularly for children and pregnant women.
0.48–0.71 µmol/L	Investigate sources for all cases.
0.72–0.95 µmol/L	Investigate sources for all cases. Notify the child’s general practitioner.
0.96–2.16 µmol/L	Investigate sources with spot tests and laboratory analysis of appropriate environmental samples.
≥2.17 µmol/L	Investigate sources with spot tests and laboratory analysis of appropriate environmental sources. Children (0–14 years) arrange an urgent paediatric assessment.

Adults (15+ years), refer to a physician if BLL $\geq 3.4 \mu\text{mol/L}$

Source: Te Whatu Ora – Health New Zealand 2024.

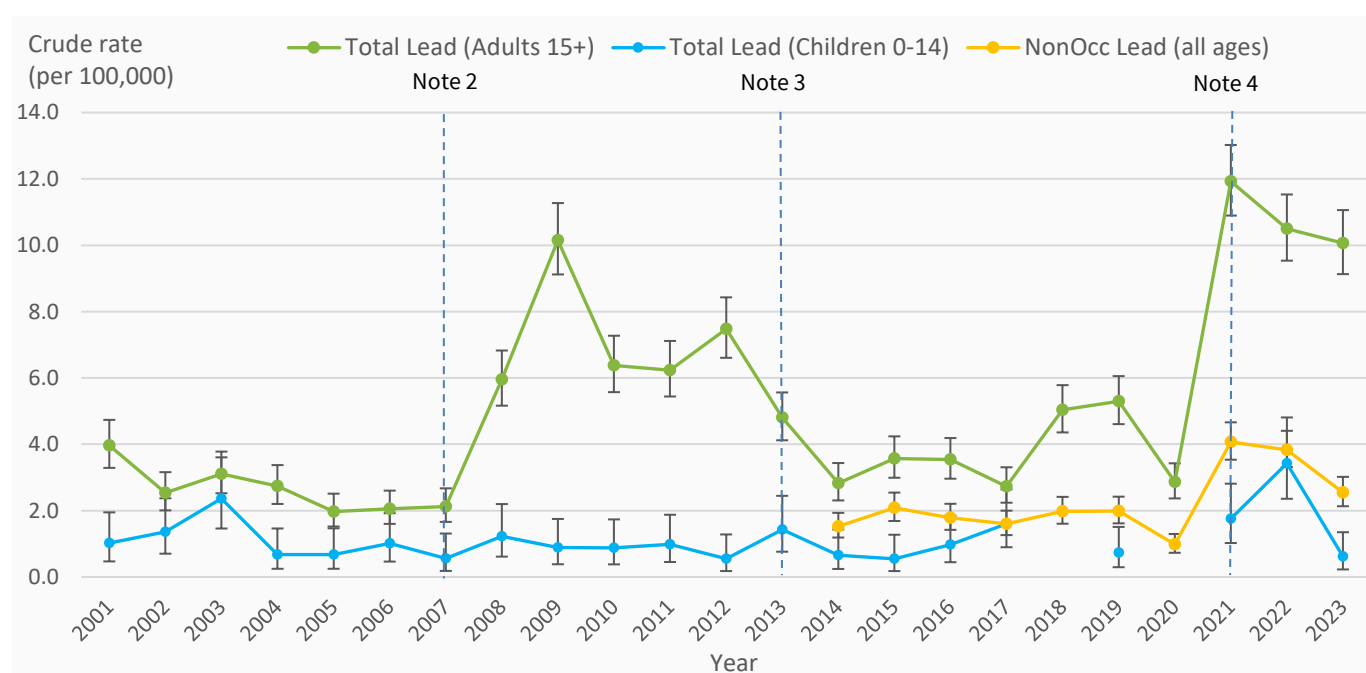
This report presents lead absorption notifications based on a notification threshold of $\geq 0.48 \mu\text{mol/L}$ up until 9 April 2021 and $\geq 0.24 \mu\text{mol/L}$ thereafter. Information on the health risks of lead absorption for adults and children can be found on the [Te Whatu Ora – Health New Zealand](https://www.ehinz.ac.nz) website.

Lead notification rates remained high for adults, while they have decreased for children

The lowering of the notifiable level from $0.47 \mu\text{mol/L}$ to $0.24 \mu\text{mol/L}$ in 2021 resulted in a large increase in total lead notifications, particularly in adults (Figure 1). Roughly 60% of notifications were in the $0.24\text{--}0.47 \mu\text{mol/L}$ blood lead level range (Figure 2a). Furthermore, non-occupational lead notification rates fell from 3.8 per 100,000 (95%CI 3.3–4.4) in 2022 to 2.5 per 100,000 (95%CI 2.1–3.0) in 2023.

Lead notification rates for children have decreased from 3.4 per 100,000 (95%CI 2.4–4.8) in 2022 to 0.6 per 100,000 (95%CI 0.2–1.3) in 2023 (Figure 1 and Figure 2b). It should be noted that while children have low notification rates relative to adults, they should be considered high risk due to lead’s impact on cognitive and neurobehavioral development (Te Whatu Ora-Health New Zealand, 2024).

Figure 1: Non-occupation lead absorption notification rates, and total rates by age, 2001–2023



Note 1: 95% confidence intervals have been presented as vertical bars. Missing rates have been suppressed due to unreliable estimates based on small numbers.

Note 2: In 2007, direct laboratory notifications were introduced, and the notifiable range was reduced to $0.48 \mu\text{mol/L}$.

Note 3: Throughout 2013, HSDIRT was introduced to districts (formerly district health boards) across New Zealand. Data from HSDIRT is

presented from 2014 onwards.

Note 4: On 9 April 2021, the notifiable range was reduced to 0.24 µmol/L.

Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2024.

Figure 2: Non-occupational lead absorption notifications, children (0–14 years) and adults (15+ years), 2014–2023



Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2024.

Lead-based paint and rifle ranges are the most common non-occupational lead sources

Lead-based paint has consistently been the most common, known non-occupational source of lead (320 notifications), followed by indoor rifle ranges (162 notifications) in 2014–23 (Table 1). Traditional medicine/cosmetics continue to be the cause of many higher range blood lead levels (BLL). Of the 28 notifications since 2014 resulting from this exposure source, the median BLL was 1.43 µmol/L.

Table 1: Non-occupational median blood lead level and interquartile range, by exposure source, 2014–23

Exposure source	Notifications	Median blood lead level, µmol/L (Interquartile range)
Lead-based paint	320	0.67 (0.50–1.00)
Rifle range	162	0.60 (0.49–0.76)
Bullet/sinker manufacture	71	0.56 (0.44–0.74)
Pica	38	0.54 (0.34–0.89)
Traditional medicine/cosmetics	28	1.43 (0.59–4.33)
Other sources	120	0.59 (0.43–0.82)
Unknown sources	456	0.57 (0.36–0.87)
Total	1195	

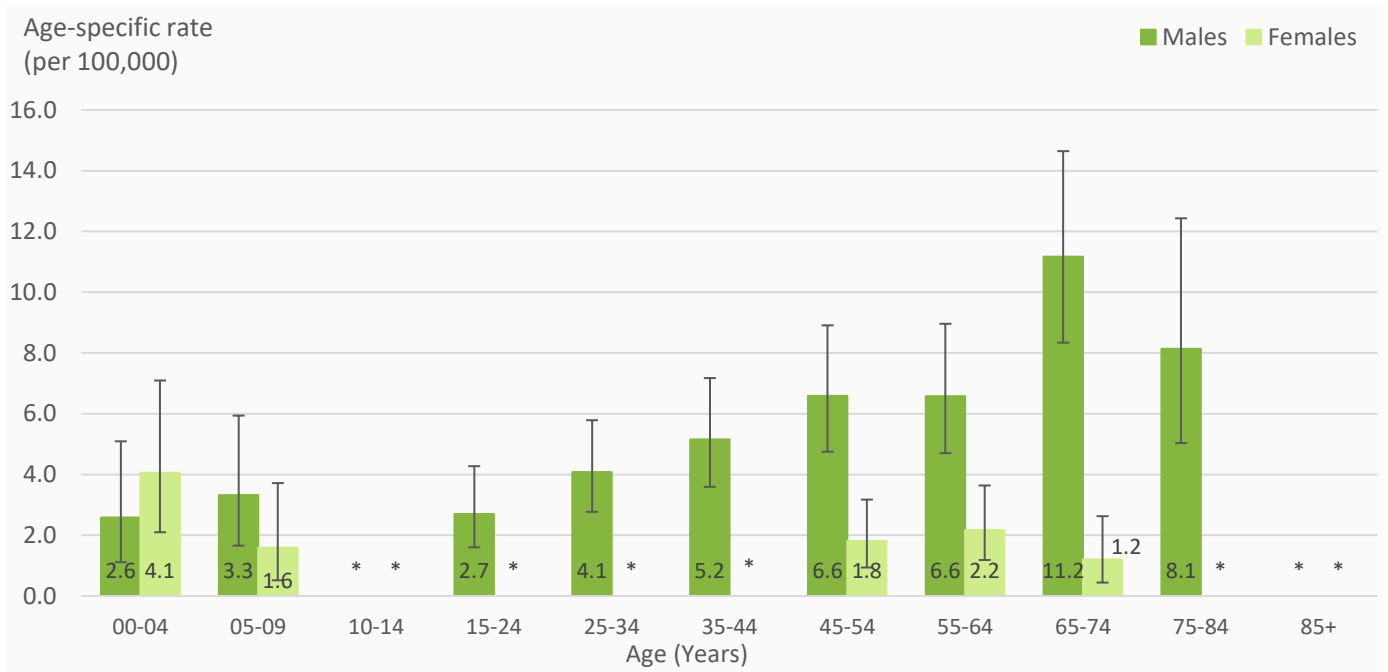
Note: Some notifications involve more than one lead source, meaning the total can be less than the sum of the sources.

Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2024.

Older adult males experience higher notification rates

Adult males (15+ years) in all age groups had higher notification rates than females in the same age group in 2022–23 (Figure 3). Males aged 65–74 years had high rates (11.2 per 100,000; 95%CI 8.3–14.6) compared to other age groups.

Figure 3: Non-occupational lead absorption notification rates, by age and sex, 2022–23



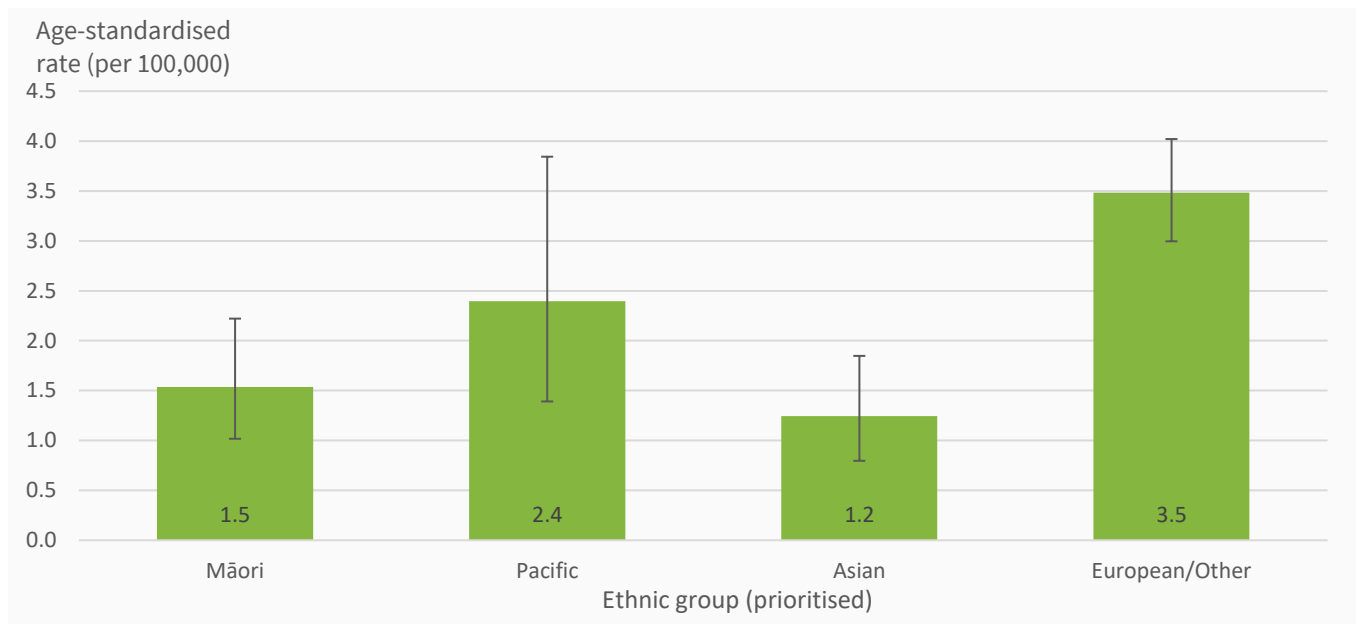
Note: *The rate is suppressed as it is an unreliable estimate based on small numbers. 95% confidence intervals have been presented as vertical bars.

Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2024.

Notification rates are high for European/Other individuals

In 2022–23, the age-standardised rate for European/Other individuals (3.5 per 100,000; 95%CI 3.0–4.0) was high compared to other ethnic groups (Figure 4).

Figure 4: Non-occupational lead notification rates, by ethnic group (prioritised), 2022–23



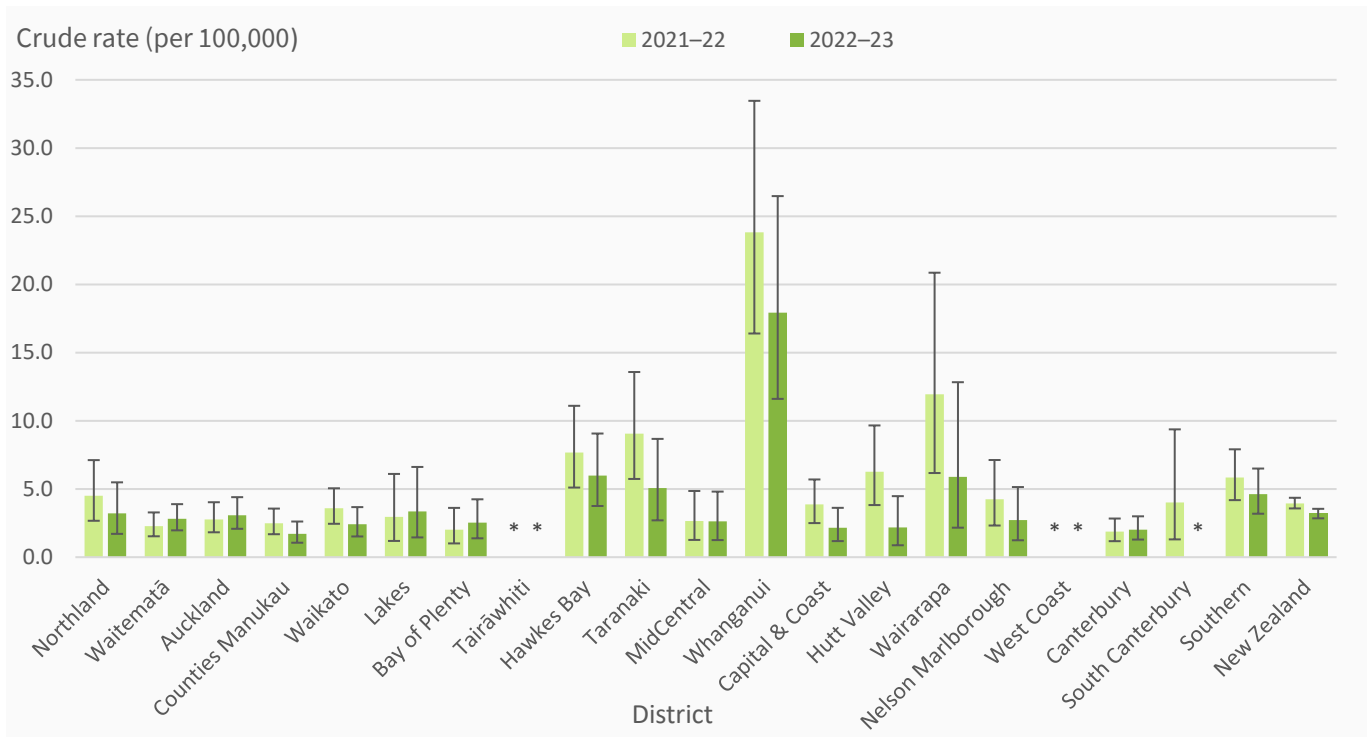
Note: 95% confidence intervals have been presented as vertical bars.

Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2024.

High lead notification rates in the Whanganui district

In 2022–23, the Whanganui district (areas formerly known as District Health Boards) reported the highest lead notification rate (17.9 per 100,000; 95%CI 11.6–26.5), which is more than five times the national rate of 3.2 per 100,000 (95%CI 2.8–3.5) (Figure 5). Whanganui district also had the highest notification rate in 2021–22.

Figure 5: Non-occupational lead absorption notification rates, by district, 2021–22 and 2022–23



Note: *The rate is suppressed as it is an unreliable estimate based on small numbers. 95% confidence intervals have been presented as vertical bars.

Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2024.

Data for this indicator

This indicator reports HSDIRT non-occupational/unknown source lead absorption notifications from 2014 to 2023. The data were extracted from the HSDIRT system on 18 March 2024. Updates or additions to HSDIRT after this date are not reflected in this factsheet.

Crude rates presented do not take into account varying age distributions when comparing between populations. Age-standardised rates presented take into account varying age distributions when comparing between populations.

For additional information, see the [Metadata](#) sheet.

References

Te Whatu Ora – Health New Zealand. 2024. *The Environmental Case Management of Lead-exposed Persons: Guidelines for Public Health Officers*. Wellington: Te Whatu Ora – Health New Zealand. URL: <https://www.tewhatauora.govt.nz/publications/the-environmental-case-management-of-lead-exposed-persons-guidelines-for-public-health-officers> (accessed 06 October 2024)

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