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 2014–2024.

Key facts

- In 2024, lead absorption notification rates increased for adults and children aged 0–14 years compared with 2023.
- Lead-based paint was the most common source of exposure, accounting for 27% of notifications since 2014.
- Males aged 55–64 years had higher lead notification rates than males in other age groups.
- European/Other individuals had the highest notification rate in 2023–24, about double that of the other ethnic groups.
- The Whanganui district had the highest lead notification rates in 2022–23 and 2023–24.

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 ≥3.4 µmol/L

Source: Te Whatu Ora – Health New Zealand 2024.

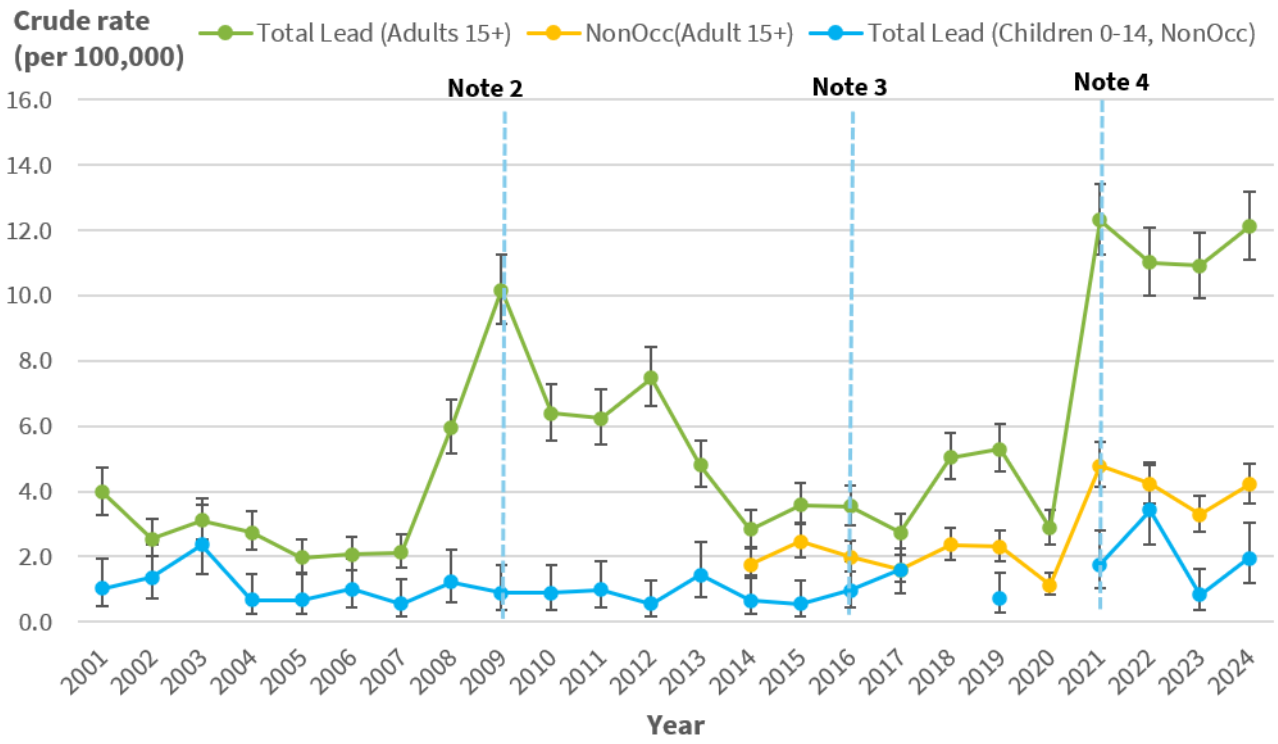
This report presents lead absorption notifications based on a notification threshold of ≥0.48 µmol/L up until 9 April 2021 and ≥0.24 µmol/L thereafter. Information on the health risks of lead absorption for adults and children can be found on the Te Whatu Ora – Health New Zealand website.

Notable increase in adult and child non-occupational lead notification rates in 2024

The lowering of the notifiable blood level from 0.47 µmol/L to 0.24 µmol/L in 2021 resulted in a large increase in total lead notifications, particularly in adults (Figure 1). After remaining stable in 2022 and 2023, adult notifications increased in 2024, reaching 12.1 per 100,000 (95%CI 11.0–13.1). However, for children and non-occupational adults (15+ years), lead notifications decreased from 2022 to 2023, then increased notably in 2024. The rate for children rose from 0.8 per 100,000 (95%CI 0.4–1.6) in 2023 to 1.9 per 100,000 (95%CI 1.2–3.0) in 2024. For non-occupational adults (15+ years), lead notifications increased from 3.3 per 100,000 (95%CI 2.8–3.9) in 2023 to 4.2 per 100,000 (95%CI 3.6–4.9) in 2024.

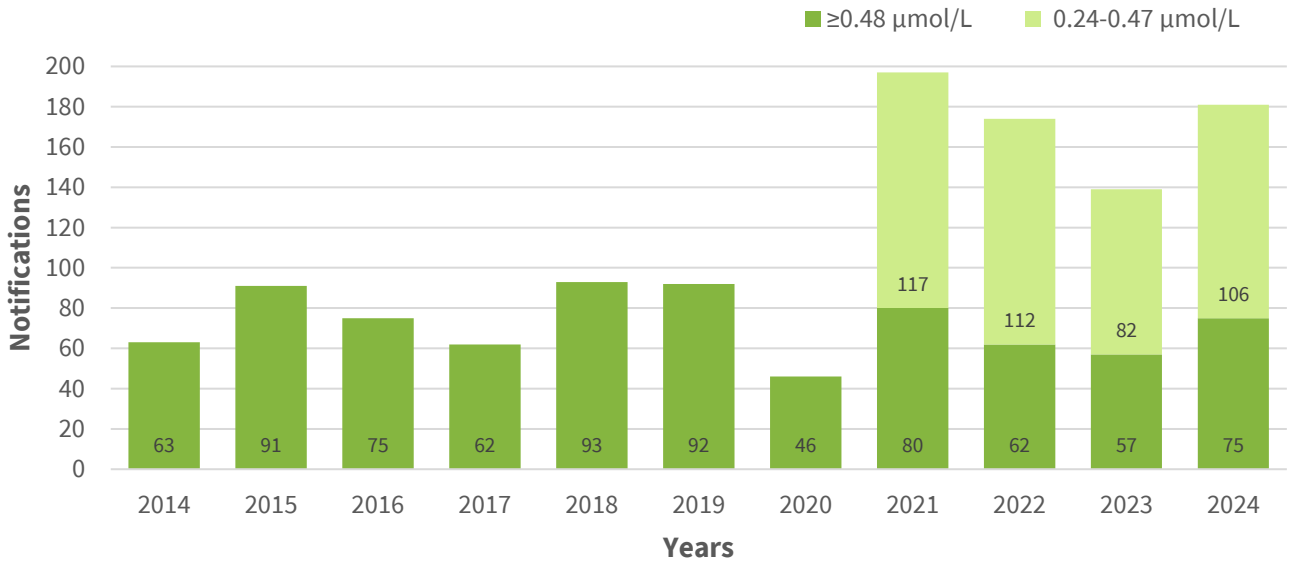
Since 2021, roughly 60% of notifications were in the 0.24–0.47 µmol/L blood lead level range for adults (Figure 2a), while for children, around 50% of notifications fell within the 0.24–0.47 µmol/L blood lead level range (Figure 2b). Although children's notification rates are relatively low, they should 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, 2001–2024



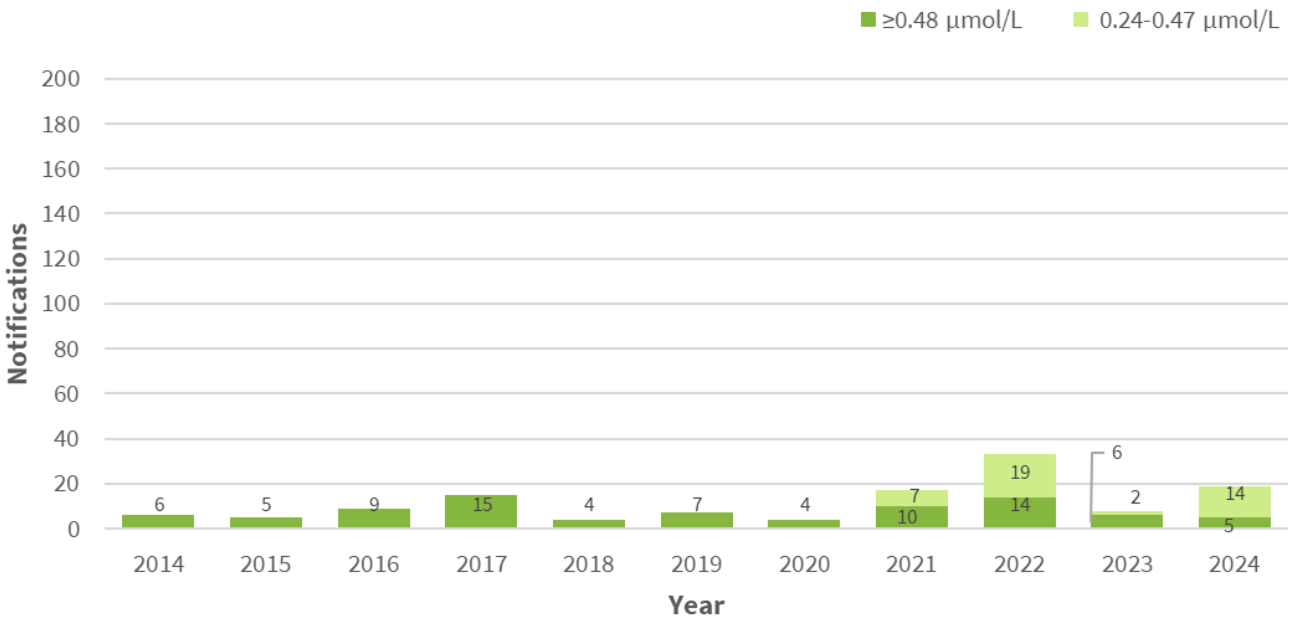
Note 1: 95% confidence intervals have been presented as vertical bars. Missing rates have been suppressed due to unreliable estimates based on small numbers.
Note 2: In 2007, direct laboratory notifications were introduced, and the notifiable range was reduced to 0.48 µmol/L.
Note 3: Throughout 2013, 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.
Note 5: All lead notifications for children are considered non-occupational.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2025.

Figure 2a: Non-occupational lead absorption notifications, adults (15+ years), 2014–2024



Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2025.

Figure 2b: Non-occupational lead absorption notifications, children (0–14 years), 2014–2024



Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2025.

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 (391 notifications), followed by indoor rifle ranges (194 notifications) in 2014–24 (Table 1). Traditional medicine/cosmetics continue to be the cause of many higher-range blood lead levels (BLL). Of the 42 notifications since 2014 resulting from this exposure source, the median BLL was 1.29 µmol/L.

Table 1: Non-occupational median blood lead level and interquartile range, by exposure source, 2014–24

Exposure source	Notifications	Median blood lead level, µmol/L (Interquartile range)
Lead-based paint	391	0.62 (0.43–0.92)
Rifle range	194	0.60 (0.47–0.76)
Bullet/sinker manufacture	82	0.54 (0.42–0.75)

Pica	43	0.53 (0.32–0.88)
Traditional medicine/cosmetics	42	1.29 (0.53–4.09)
Other sources	152	0.56 (0.40–0.82)
Unknown sources	540	0.52 (0.33–0.80)
Total	1444	

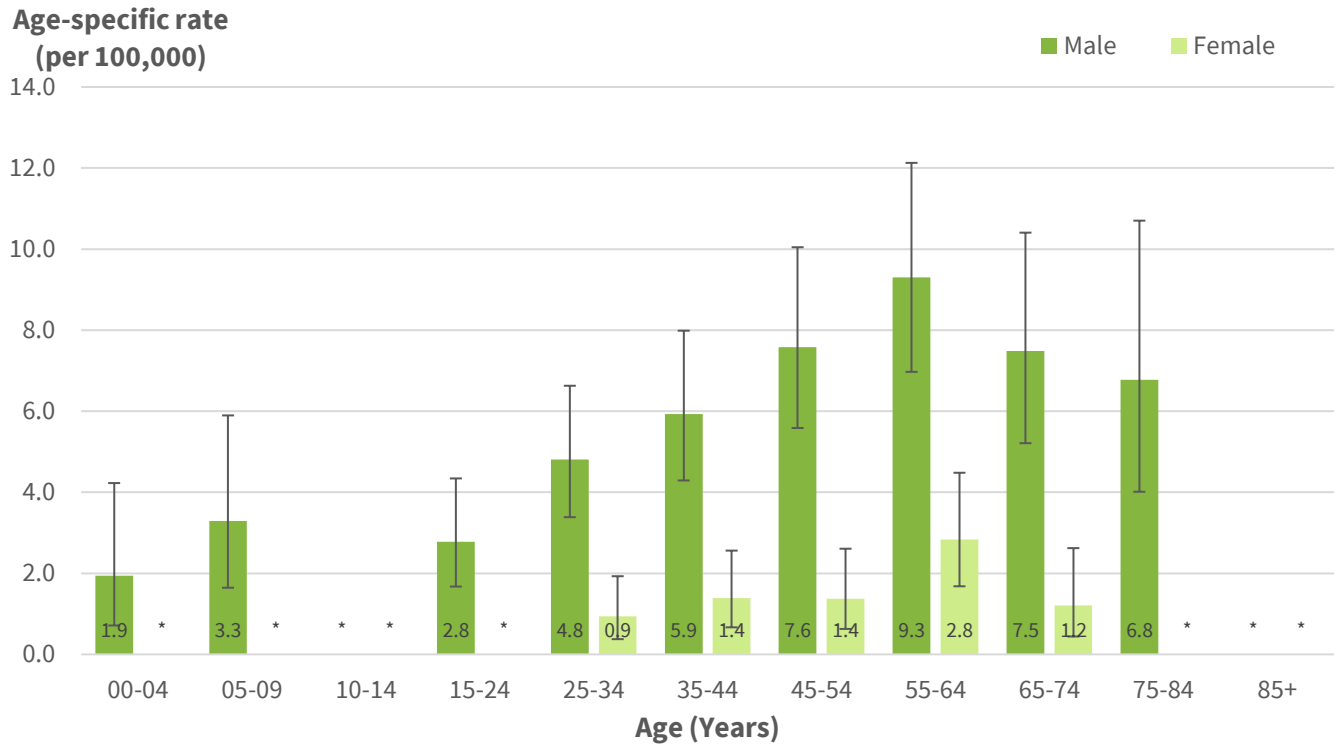
Note: Some notifications involve more than one lead source, meaning the total can be less than the sum of the sources.

Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2025.

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 2023–24 (Figure 3). Males aged 55–64 years had high rates (9.3 per 100,000; 95%CI 7.0–12.0) compared to other age groups.

Figure 3: Non-occupational lead absorption notification rates, by age and sex, 2023–24



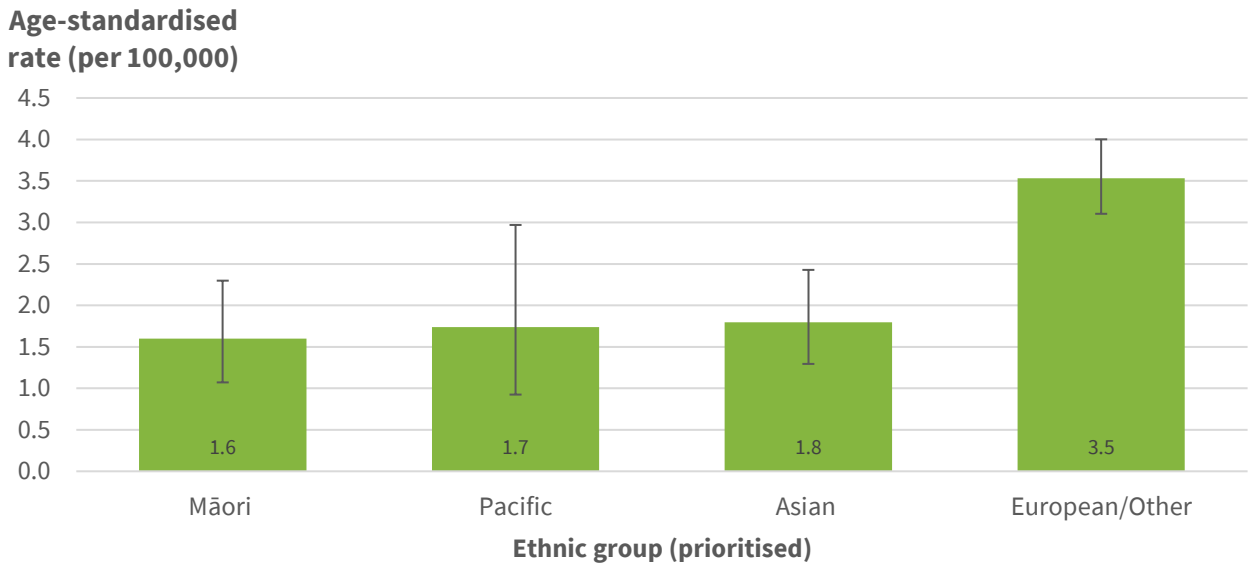
Note: *The rate is suppressed due to low numbers (count <5). 95% confidence intervals have been presented as vertical bars.

Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2025.

Notification rates are high for European/Other individuals

In 2023–24, the age-standardised rate for European/Other individuals (3.5 per 100,000; 95%CI 3.1–4.0) was about twice the rate observed for other ethnic groups (Figure 4).

Figure 4: Non-occupational lead notification rates, by ethnic group (prioritised), 2023–24



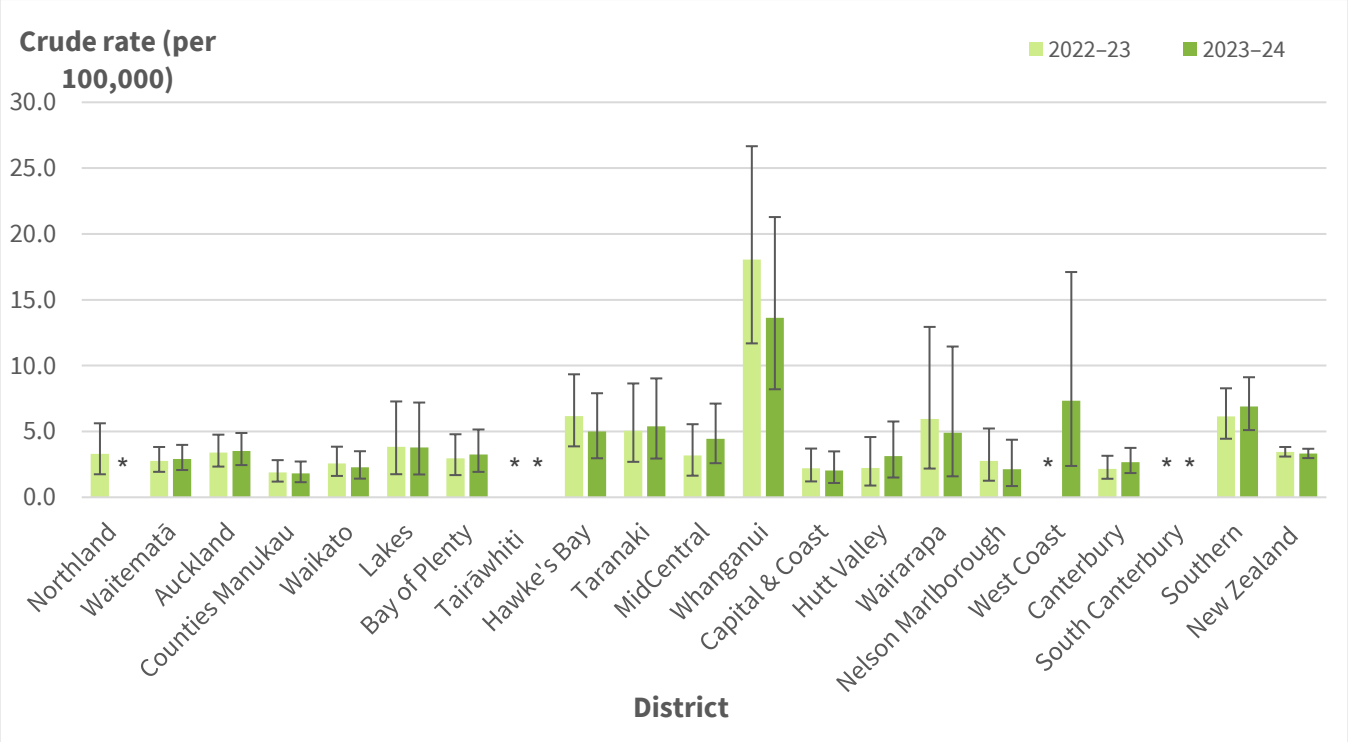
Note: 95% confidence intervals have been presented as vertical bars.

Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2025.

High lead notification rates in the Whanganui district

In 2023–24, the Whanganui district (areas formerly known as District Health Boards) reported the highest lead notification rate (13.6 per 100,000; 95%CI 8.2–21.3), which is more than four times the national rate of 3.3 per 100,000 (95%CI 3.0–3.7) (Figure 5). Whanganui district also had the highest notification rate in 2022–23.

Figure 5: Non-occupational lead absorption notification rates, by district, 2022–23 and 2023–24



Note: *The rate is suppressed due to low numbers (count <5). 95% confidence intervals have been presented as vertical bars.

Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2025.

Data for this indicator

This indicator reports HSDIRT non-occupational/unknown source lead absorption notifications from 2014 to 2024. The data were extracted from the HSDIRT system on 24 March 2025. 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.tewhatuora.govt.nz/publications/the-environmental-case-management-of-lead-exposed-persons-guidelines-for-public-health-officers (accessed 06 October 2024)

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