Occupational lead absorption notifications

This report presents data on occupational lead absorption notifications in Aotearoa New Zealand's working population aged 15 years and older, entered into the Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) from 2014–2023.

Key facts

- Occupational lead absorption notification rates remained high in 2023, partly due to the lowering of the new notifiable level in 2021.
- Painters and smelting/metal refinery workers were the most notified occupational groups with lead absorption in 2022–23.
- Pacific people continue to have the highest occupational lead absorption notification rates since 2017.
- Occupational lead absorption notification rates for people living in the most deprived areas (NZDep 2018 quintile 5) were more than twice the rate of those living in the least deprived areas.

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. The notifiable threshold was reduced from 0.48 µmol/L to 0.24 µmol/L on 9 April 2021. At and above this level, public health intervention and investigation of sources and pathways is dependent on the blood lead level of the individual as set by the Te Whatu Ora – Health New Zealand (2024) and WorkSafe (2023).

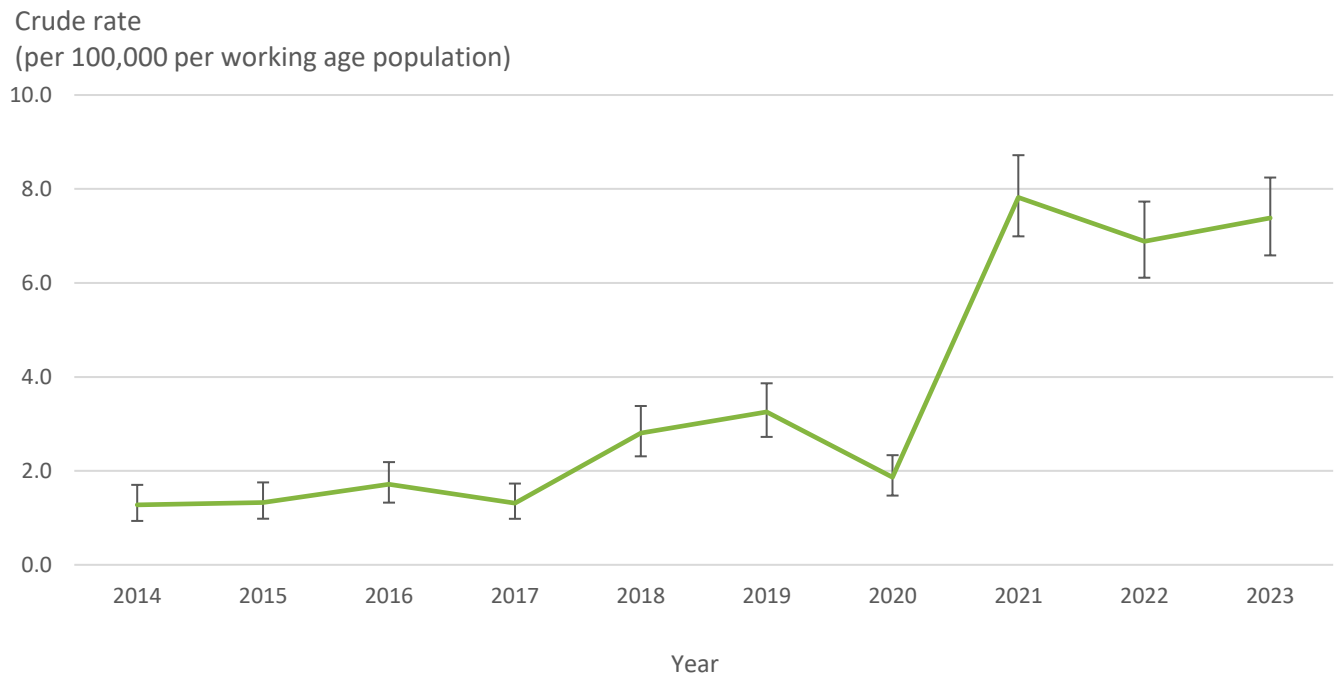
This report presents occupational lead absorption notifications based on the blood lead notification thresholds. These notifications relate to individuals aged 15 years or older (working age) who are potentially exposed in the workplace, as determined by the Public Health Service. It is often not possible to be certain of the exposure source(s). As a result, determination is left to the investigator's discretion and knowledge of individual cases. For information on the health risks of lead absorption, visit the Te Whatu Ora – Health New Zealand website.

Occupational lead absorption notification rates remained high in 2023

Occupational lead absorption notification rates remained high in 2023 (7.4 per 100,000 working age population; 95%CI 6.6–8.2) following a large increase in 2021 (Figure 1). This is partially due to the lowering of the new notifiable level from 0.47 µmol/L to 0.24 µmol/L on 9 April 2021. However, the number of

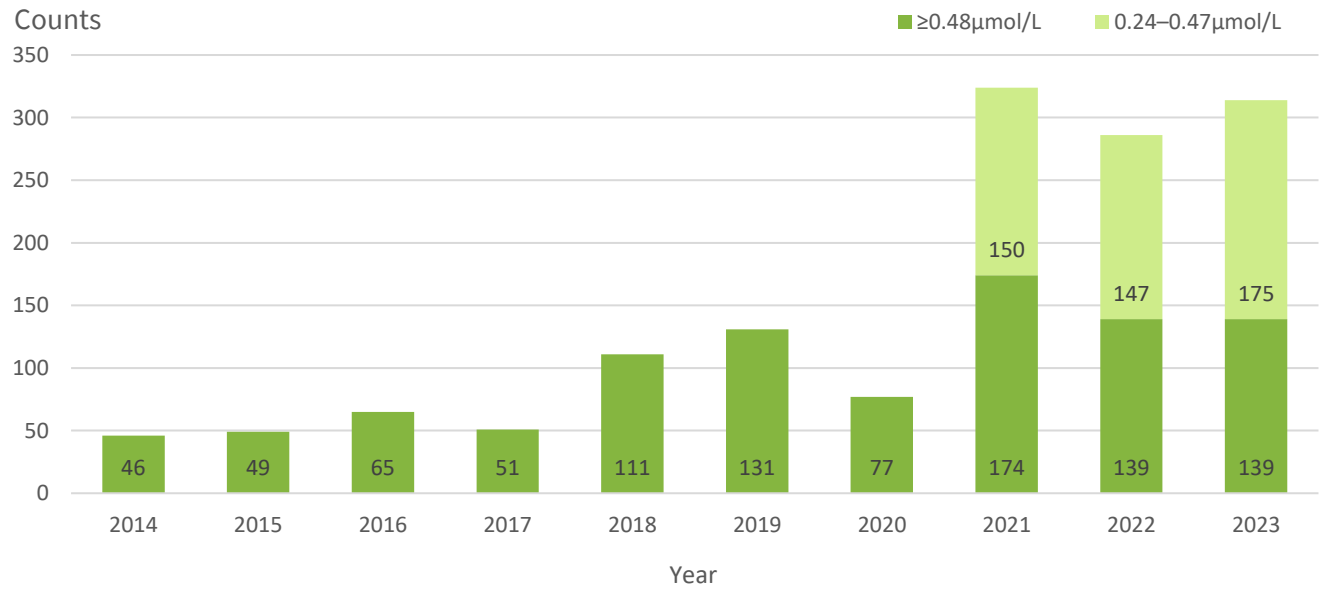
notifications with blood lead levels (BLL) of ≥0.48 µmol/L in 2021, 2022, and 2023 are still high compared to previous years (Figure 2).

Figure 1: Occupational lead absorption notification rates, 2014–2023



Note: 95% confidence intervals have been presented as vertical bars.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2024.

Figure 2: Occupational lead absorption notifications, by blood lead level, 2014–2023



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

Painters and smelting/metal refinery workers had the most notifications

Painters (215 notifications) made up most occupational lead notifications in 2022–23, followed by smelting/metal refinery workers (178 notifications) (Table 1). Artists have the highest median blood lead level (BLL) (0.62 µmol/L) as well as construction workers (0.58 µmol/L).

Table 1: Occupational lead absorption notifications and median blood lead level, by occupational group, 2022–23

Occupation group	Notifications	Median blood lead level, µmol/L (Interquartile range)
Painting	215	0.49 (0.32–0.83)
Smelting/Metal working	178	0.50 (0.35–0.70)
Metal recycling	53	0.38 (0.31–0.56)
Automotive repair	25	0.36 (0.28–0.47)
Lead light fitter/manufacturer	24	0.47 (0.38–0.60)
Construction (non-painter)	23	0.58 (0.30–1.11)
Engineer/technician (non-automotive)	10	0.30 (0.28–0.34)
Battery manufacturing/recycling	10	0.35 (0.28–0.37)
Mining/Oil and Gas	7	0.29 (0.26–0.30)
Sandblasting	5	0.34 (0.28–0.51)
Artist (non-painter)	4	0.62 (0.48–0.71)
Factory worker (other/unspecified)	1	-
Sinker/figurine manufacturing	1	-
Unknown/unrecorded	44	0.35 (0.29–0.47)
Total	600	

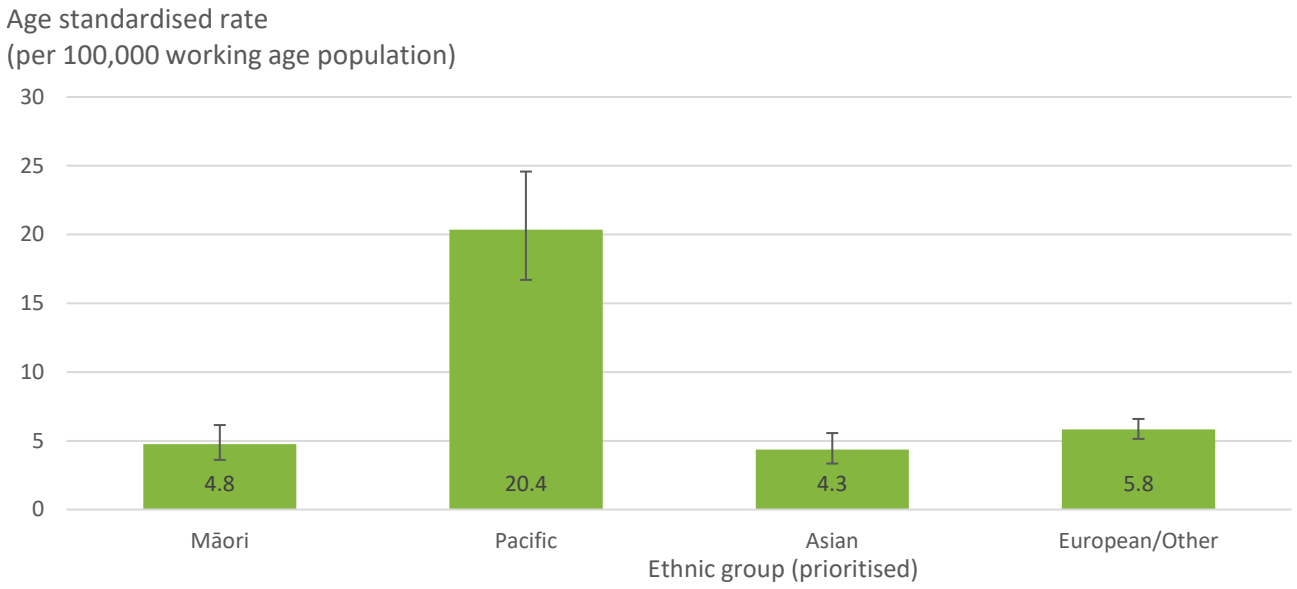
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2024.

In 2023, out of the 311 occupational lead notifications, 293 were males, and 18 were females. From 2014 to 2023, males accounted for around 95% of notifications every year.

Pacific people were disproportionately affected by occupational lead absorption

Pacific people had the highest occupational lead absorption notification rates (20.4 per working age population; 95%CI 16.7–24.6) in 2022–23 (Figure 3). They had three times the rate of occupational lead notification as European/Other people (5.8 per working age population; 95%CI 5.1–6.6). Rates of occupational lead notifications for Pacific people have been consistently higher than all other ethnic groups from 2017 onwards.

Figure 3: Occupational lead absorption notification rates, by ethnic group (prioritised), 2022–23

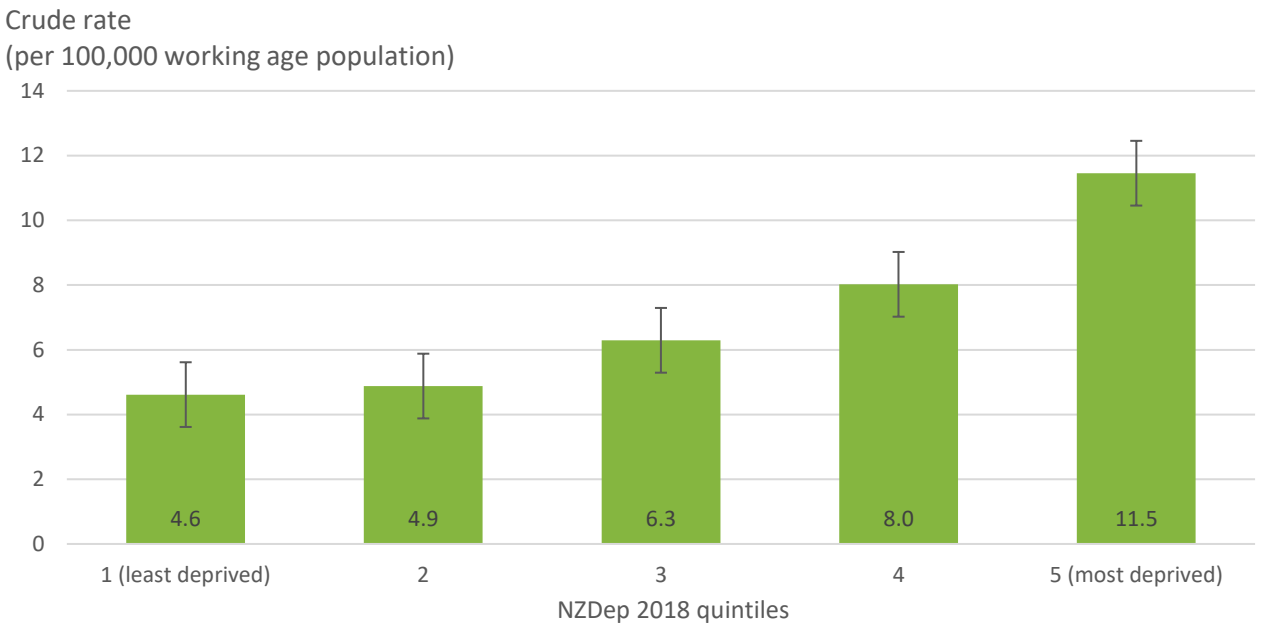


Note: 95% confidence intervals have been presented as vertical bars.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2024.

Higher lead notification rates in more deprived areas

In 2022–23, occupational lead absorption notification rates were much higher in more socioeconomically deprived areas (Figure 4). After standardising for age, people living in the most deprived areas (NZDep2018 quintile 5) had more than twice the rate of occupational lead notifications as those living in the least deprived areas (quintile 1) (standardised rate ratio = 2.6; 95%CI 1.9–3.5).

Figure 4: Occupational lead notification rates, by NZDep 2018 quintiles, 2022–23

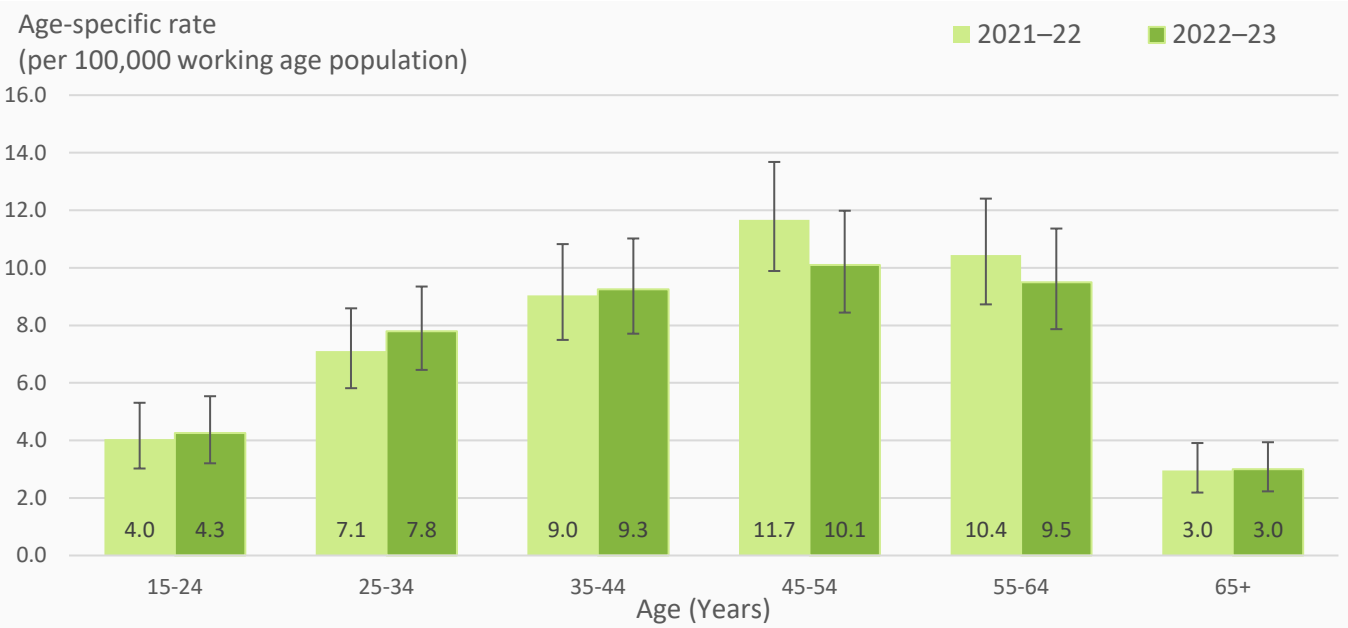


Note: 95% confidence intervals have been presented as vertical bars.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2024.

High occupational lead notification rates in the 45–54-year-old age group

In 2022–23, the age-specific rates of occupational lead notifications among those aged 45–54 years (10.1 per 100,000 working age population; 95%CI 8.4–12.0) were two to three times that of 15–24 and 65+ year olds (Figure 5). A similar pattern was seen in 2021–22, with the youngest and oldest age groups having lower rates.

Figure 5: Occupational lead absorption notification rates, by age group, 2021–22 and 2022–23

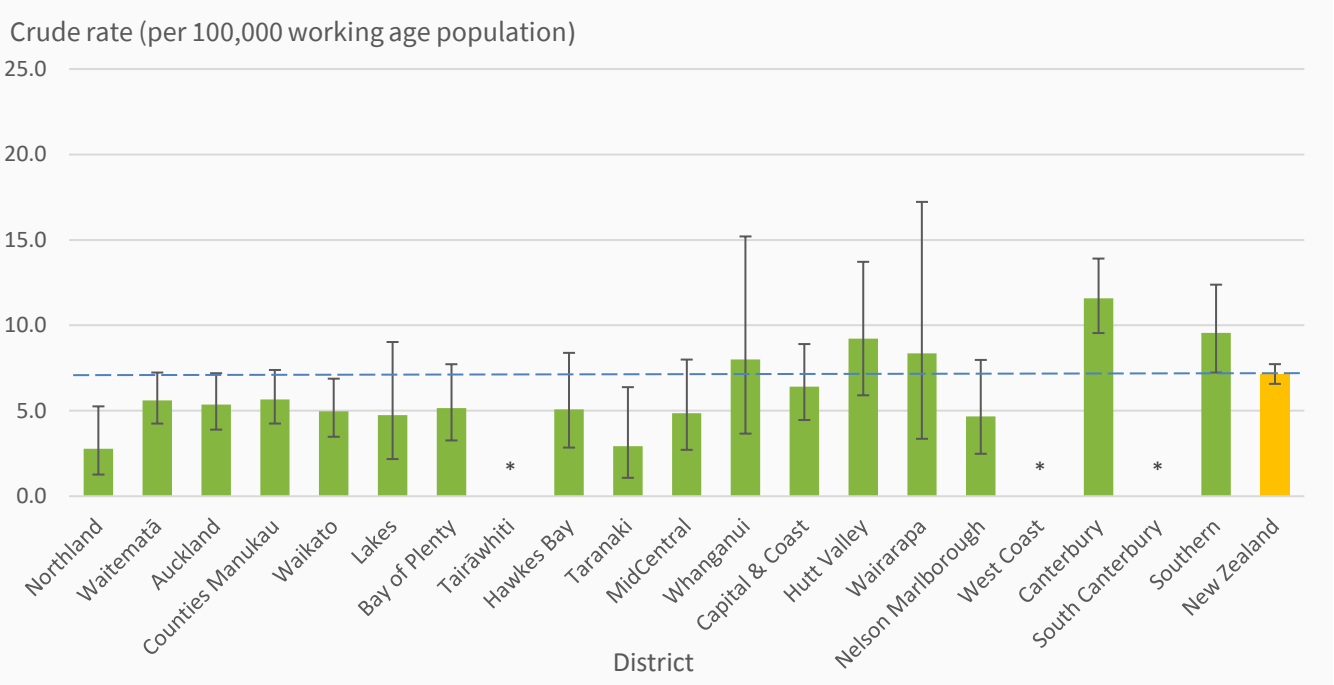


Note: 95% confidence intervals have been presented as vertical bars.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2024.

High occupational lead notification rates in the Canterbury district

In 2022–23, people living in the Canterbury district (areas formerly known as District Health Boards) had a relatively high rate of occupational lead notifications (11.6 per 100,000 working age population; 95%CI 9.6–13.9). In contrast, the Northland and Taranaki districts had low rates of occupational lead notifications (Figure 6).

Figure 6: Occupational lead absorption notification rates, by district, 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 occupational 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.tewhatuora.govt.nz/publications/the-environmental-case-management-of-lead-exposed-persons-guidelines-for-public-health-officers (accessed 06 October 2024).

WorkSafe. 2024. *Workplace exposure standards and biological exposure indices (Edition 14).* Wellington: WorkSafe. URL: https://www.worksafe.govt.nz/topic-and-industry/monitoring/workplace-exposure-standards-and-biological-exposure-indices/ (accessed 06 October 2024).

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Citation

Environmental Health Intelligence. 2024. O*ccupational lead absorption notifications*. [Surveillance Report]. Wellington: Environmental Health Intelligence NZ, Massey University.

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