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 2014–2024.

Key facts

- Occupational lead absorption notification rates remained high in 2024, partly due to the lowering of the new notifiable level in 2021.
- Painters and smelting/metal refinery workers had the highest rates of lead absorption notifications in 2023–24.
- 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 2023 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 are dependent on the blood lead level of the individual, as set by Te Whatu Ora – Health New Zealand (2024) and WorkSafe (2023).

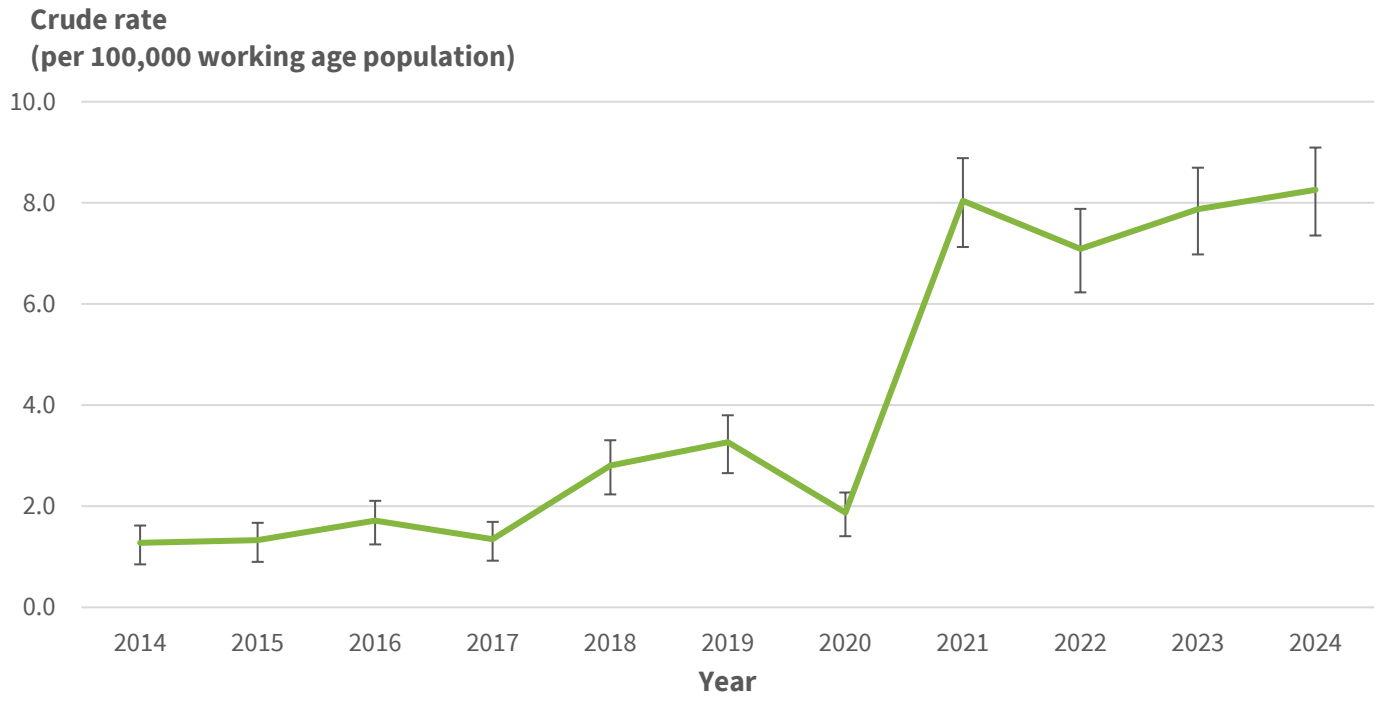
This report presents occupational lead absorption notifications based on the blood lead notification thresholds. These notifications relate to individuals aged 15 years or older (working age) who are potentially exposed in the workplace, as determined by the Public Health Service. It is often not possible 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 2024

Occupational lead absorption notification rates continued to rise in 2024 (8.3 per 100,000 working age population; 95%CI 7.4–9.2), with a total of 356 notifications, 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

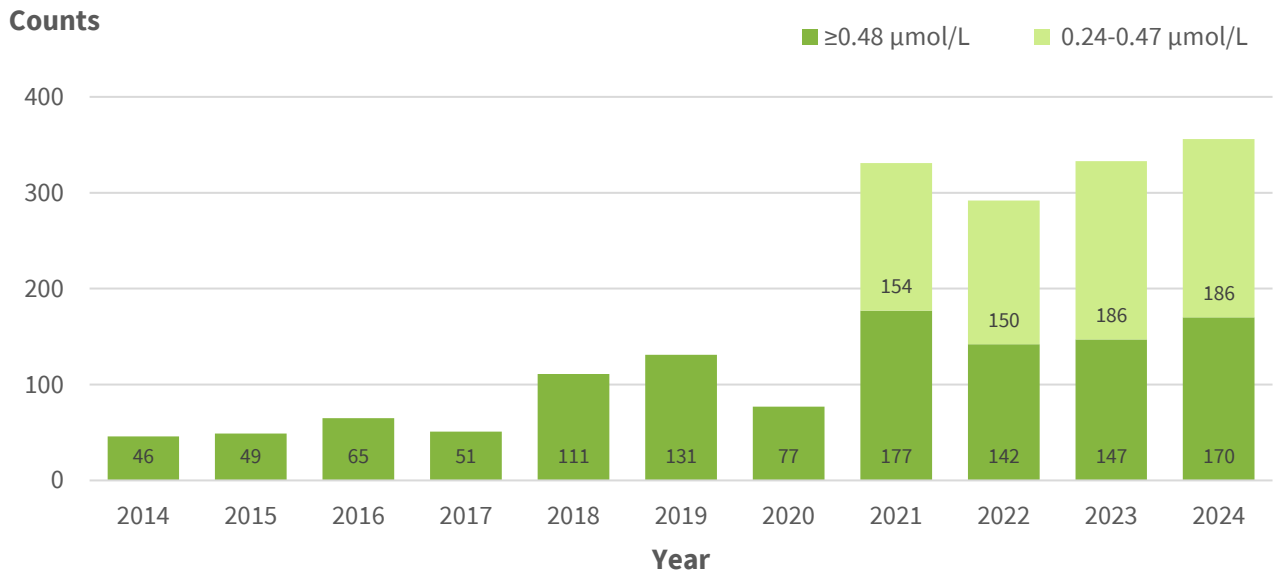
2021. However, the number of notifications with blood lead levels (BLL) of ≥0.48 µmol/L in 2021, 2022, 2023, and 2024 is still high compared to previous years (Figure 2).

Figure 1: Occupational lead absorption notification rates, 2014–2024



Note: 95% confidence intervals have been presented as vertical bars.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2025.

Figure 2: Occupational lead absorption notifications, by blood lead level, 2014–2024



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

Painters and smelting/metal refinery workers had the most notifications

Painters (313 notifications) made up most occupational lead notifications in 2023–24, followed by smelting/metal refinery workers (170 notifications) (Table 1). Firearm users and construction workers have the highest median blood lead level (BLL) 0.74 µmol/L (0.64 µmol/L), respectively?

Table 1: Occupational lead absorption notifications and median blood lead level, by occupational group, 2023–24

Occupation group	Notifications	Median blood lead level, µmol/L (Interquartile range)
Painting	313	0.47 (0.32–0.80)
Smelting/Metal working	170	0.47 (0.33–0.65)
Metal recycling	30	0.45 (0.30–0.58)
Lead light fitter/manufacturer	28	0.46 (0.32–0.56)
Construction (non-painter)	27	0.64 (0.38–1.11)
Automotive repair	16	0.48 (0.35–0.73)
Battery manufacturing/recycling	12	0.33 (0.26–0.41)
Engineer/technician (non-automotive)	11	0.44 (0.32–0.50)
Mining/Oil and Gas	9	0.30 (0.26–0.32)
Factory worker (other/unspecified)	5	0.29 (0.27–0.41)
Artist (non-painter)	4	0.46 (0.34-0.58)
Firearms user	3	0.74 (0.50–0.92)
Sandblasting	3	0.35 (0.30-0.55)
Office worker	2	0.46 (0.41-0.50)
Other	10	0.46 (0.31-0.74)
Unknown/unrecorded	46	0.35 (0.29–0.47)
Total	689	

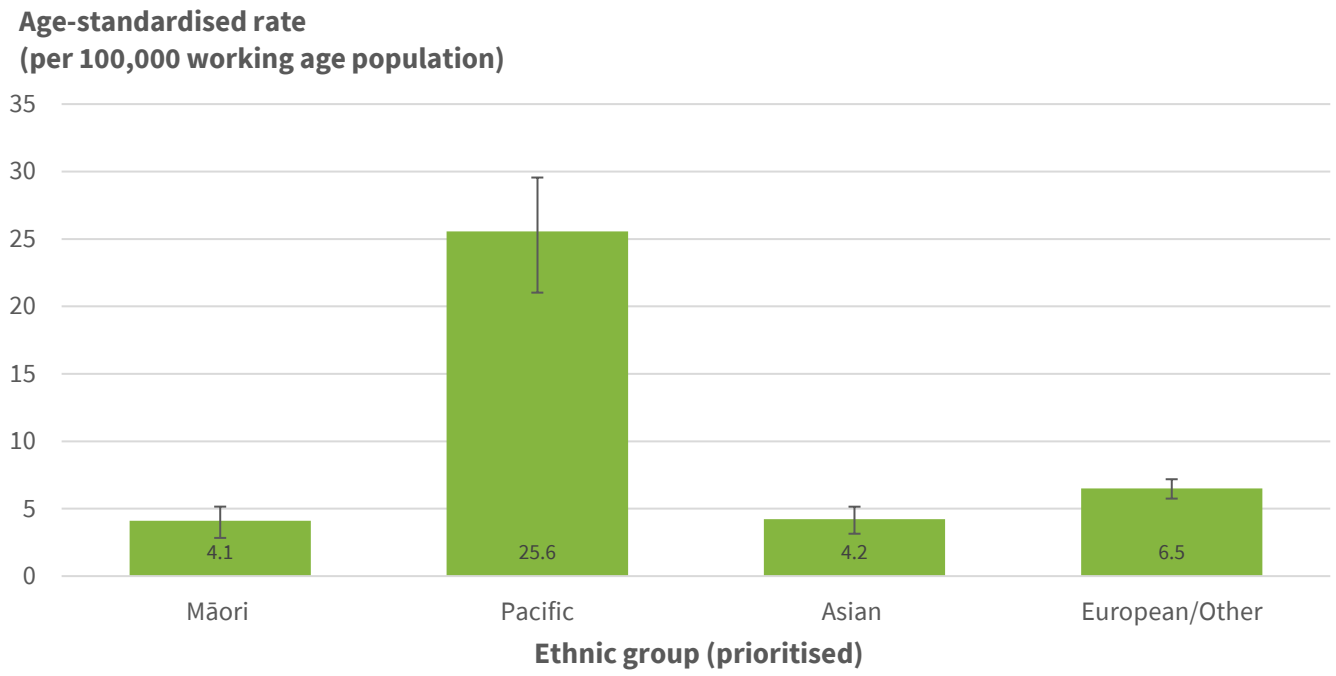
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2025.

In 2024, out of the 356 occupational lead notifications, 320 were males, 24 were females, and 12 were unknown. From 2014 to 2024, males accounted for around 95% of notifications every year.

Pacific people were disproportionately affected by occupational lead absorption

In 2023-24, the rate of occupational lead absorption notification for Pacific people had the highest rates (25.6 per 100,000 working age population; 95%CI 21.5–30.1) in 2023–24 (Figure 3a), and was nearly four times that for European/Other people (6.5 per 100,000 working age population; 95%CI 5.8–7.2). Rates of occupational lead notifications for Pacific people have been consistently higher than all other ethnic groups since 2017.

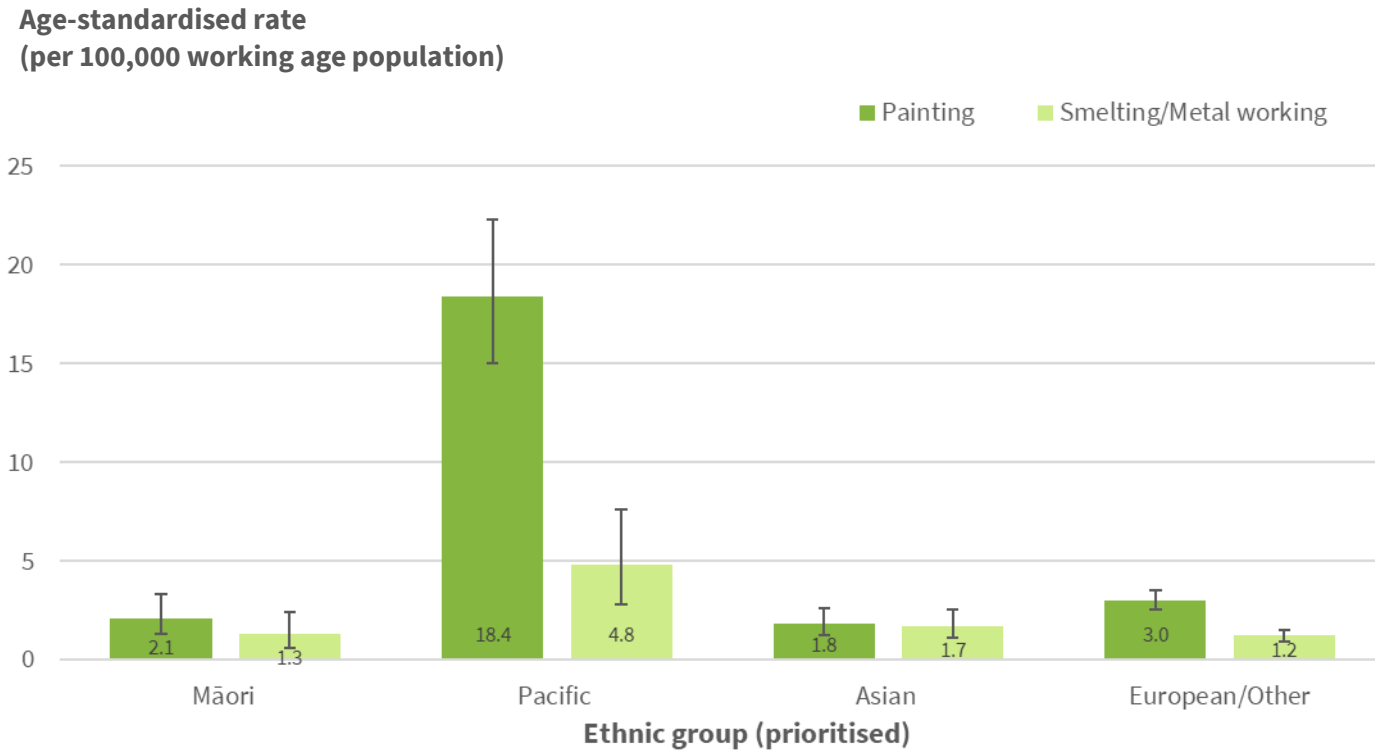
Figure 3a: Occupational lead absorption notification rates, by ethnic group (prioritised), 2023–24



Note: 95% confidence intervals have been presented as vertical bars.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2025.

Around 71% of lead notifications among Pacific people were associated with painting-related occupations (Figure 3b). The notification rate in this group was 18.4 per 100,000 working-age population (95% CI 15.0–23.9), which is substantially higher than the rates observed in other ethnic groups for painting-related occupations.

Figure 3b: Occupational lead absorption notification rates for painters and smelting/metal workers, 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.

Higher lead notification rates in more deprived areas

In 2023–24, 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 (NZDep2023 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 = 2.5; 95%CI 1.9–3.1).

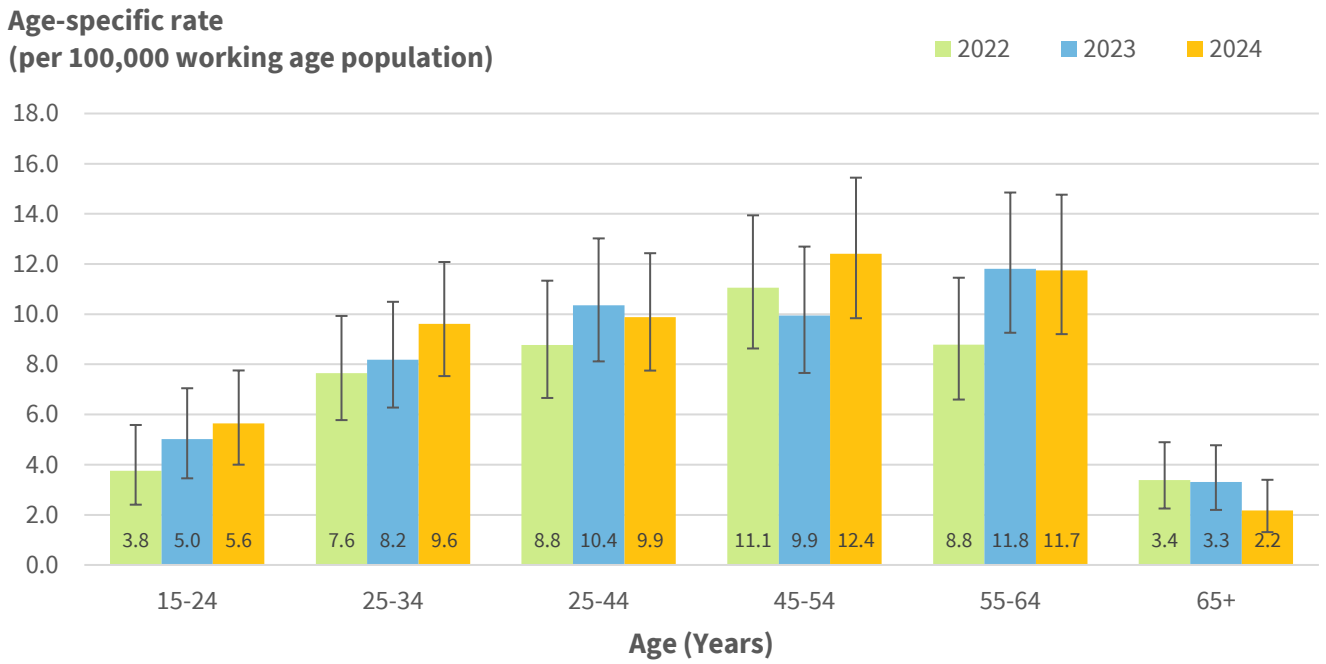
Figure 4: Occupational lead notification rates, by NZDep 2023 quintiles, 2023–24

Note: 95% confidence intervals have been presented as vertical bars.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2025.

Young workers show a gradual increase in lead absorption notification rates

From 2022 to 2024, lead absorption rates fluctuated across age groups. Age-specific rates of occupational lead notifications gradually increased among workers aged 15–24 years and 25–34 years, while the rate steadily decreased among those aged 65 years and older. In 2024, the rate among workers aged 45–54 years (12.4 per 100,000 working age population; 95%CI 9.8–15.4) was more than twice that of the 15–24 year olds (5.6 per 100,000 working age population; 95%CI 4.0–7.8) and over five times higher than that of those aged 65 years and over (2.2 per 100,000 working age population; 95%CI 1.3–3.4)) (Figure 5).

Figure 5: Occupational lead absorption notification rates, by age group, 2022, 2023, and 2024

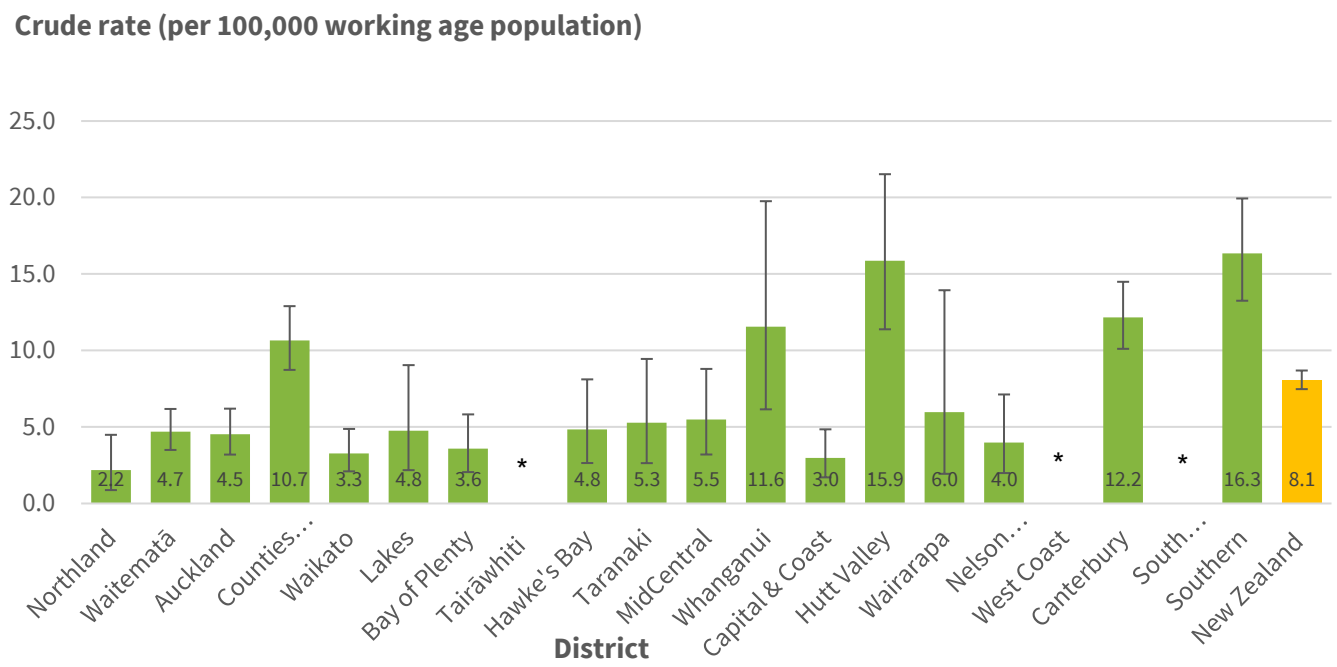


Note: 95% confidence intervals have been presented as vertical bars.
Source: Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) 2025.

High occupational lead notification rates in the Southern district

In 2023–24, occupational lead notification rates varied widely across districts (areas formerly known as District Health Boards). People living in the Southern district had a relatively high rate of occupational lead notifications (16.3 per 100,000 working age population; 95%CI 13.3–19.9). In contrast, the Northland and Capital & Coast districts had low rates of occupational lead notifications (Figure 6). Rates in Southern (16.3), Hutt Valley (15.9), Canterbury (12.2), and Counties Manukau (10.7) were higher than the national rate of 8.1 per 100,000 working age population (95%CI: 7.5–8.7).

Figure 6: Occupational lead absorption notification rates, by district, 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 occupational 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).

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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