Information topic	Details
Indicator name	**Non-occupational/unknown source of lead absorption notifications in New Zealand**
Domain and topic	Hazardous Substances domain: Non-occupational/unknown source of lead absorption notifications.
Indicator definition and units	The number and rate of non-occupational and unknown source lead notifications entered into the HSDIRT reporting tool in New Zealand, where the blood lead level is greater than or equal to 0.48 µmol/l before 09/04/2021 and greater than or equal to 0.24 µmol/l from 09/04/2021 onwards.
Data sources	• The Hazardous Substances Disease and Injury Reporting Tool (HSDIRT); 2014–2023 • Episurv: 2001 – 2013 • Populations web tool (Health New Zealand–Te Whatu Ora) • Aotearoa Data Explorer (Stats NZ)
Numerator	Number of non-occupational and unknown source lead absorption notifications.
Denominator	• Notification rate: Statistics New Zealand estimated resident population, and population projections (for ethnicity data from 2019 onwards) in the working age population (15+ years). Population denominators for prioritised ethnicity were obtained from the Health New Zealand Populations web tool (based on 2018 Census data, as 2023 Census-based projections are not yet available). For other analyses (crude rates, age, sex, DHB), Statistics New Zealand Subnational Population Estimates were used.
Methodology	Due to the health effects associated with lead exposure, lead absorption is a notifiable condition if the blood levels are greater than or equal to 0.24µmol/l as of 09/04/2021. GPs or local Public Health Services notify cases of lead absorption, to the HSDIRT which is administered by Environmental Health Intelligence NZ. Public Health Services will assign a case status based on their investigation. Cases are not included in the analysis if they are assigned as 'not a case'. The date of lead notifications is approximated using the lab lead results date. In the event this is not available, the date of assessment recorded by the PHS is used for analysis. If both dates are not available, then the created date of the HSDIRT notification is used. Lead notifications are classified as non-occupational if "Exposure Place" is listed as "PUBLIC PLACE", "HOME", "SCHOOL" or "OTHER", or if "Exposure Lead source" is recorded as "NON-OCCUPATIONAL".

	Lead notifications classified as unknown have not been classified as either occupational or non-occupational. Where a person has had a repeat blood lead level taken within 366 days of the original test, the repeat blood test is not included as a second notification unless further investigation or public health action has resulted. NHI number is used to identify individuals with repeat tests. A lead level must be provided for the case to be included in the analysis. Prioritised ethnic group has been used, in the following prioritisation order: Māori, Pacific peoples, Asian, European/Other. **Suppression** Crude rates are suppressed for counts less than 5 or populations less than 30, due to unreliability of the estimate with small numbers. Age-standardised rates are suppressed for overall counts less than 20, or if any age-band of the calculation has a population less than 30, due to unreliability of the estimate with small numbers (Ahmad et al 2001). **Confidence intervals** 95% confidence intervals were calculated based on the methodology outlined in APHO (2008). Confidence intervals are presented as vertical bars on graphs. **Data matching (for all HSDIRT data):** In August 2023, missing demographic information; age (7 missing), sex (46 missing), ethnicity (561 missing) and address (257 missing) were collected from HSDIRT along with the linked NHI number. NHI's were sent to Te Whatu Ora for matching through the IDI. Quality control checks were done on returned information including: - assessment of repeat NHI's to ensure information was the same - allocation of addresses to the correct PHU and district - ensuring that information sent and received was accurate Once checks were complete, data was merged with the raw HSDIRT data for analysis.
Time period and time scale	The HSDIRT was rolled out progressively to all districts throughout 2013; therefore 2013 data were not complete. Consequently, notifications are reported from 2014.
Population coverage	All people in New Zealand of all ages.
Spatial Coverage	Nationally, with regional results available by district (formerly District Health Board (DHB) areas).
Measures of frequency	Results are presented by year, sex, age group, lead source, ethnicity and district (formerly District Health Board areas).

Limitations of indicator	Lead absorption is challenging to detect based on symptoms alone as many cases are asymptomatic and will therefore not be seen by a doctor and/or have a blood lead test. In some instances, a blood lead test will occur because of awareness of the person's occupation.
Limitations of data source	This data source only includes cases that were notified and will be underestimating the total burden of diseases or injuries that were caused by hazardous substances exposures. Also, a case will not be included in the analysis if the GP is unaware of the tool and does not use it to notify cases to the Public Health Service or if the laboratory does not directly notify the blood lead result to EpiSurv.
Related indicators	Hazardous substances-related deaths reported to the coroner in New Zealand Hazardous substances-related deaths registered in New Zealand Unintentional hazardous substances-related hospitalisations Unintentional hazardous substances exposures in children (0–14 years)
For more information	HSDIRT notification tool. https://www.ehinz.ac.nz/indicators/hazardous-substances/resources-for-health-professionals/
References	Ahmad OB, Boschi-Pinto, Lopez. et al. 2001. *Age Standardization of Rates: A New WHO Standard (Technical Report).* GPE Discussion Paper Series: No. 31. Geneva: World Health Organization. APHO. 2008. *Technical Briefing 3: Commonly used public health statistics and their confidence intervals.* York, UK: Association of Public Health Observatories.