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Information topic	Details
Indicator name	**Unintentional hazardous substances-related hospitalisations**
Domain and topic	Hazardous Substances domain: Unintentional hazardous substances-related hospitalisations
Indicator definition and units	The number and the rate of unintentional hazardous substances-related hospital discharges. Rates are presented per 100,000 population. * A hazardous substance is anything that can explode, catch fire, oxidise, corrode or be toxic to humans, as defined in the Hazardous Substances and New Organisms Act (HSNO) 1996. Substances that are covered by the HSNO Act, and the Health Act's "poisoning arising from chemical contamination of the environment", in particular carbon monoxide, are included. Medicines in finished dose form, alcohol when classified as a food item, chemical toxins associated with food (food poisoning), plants and plant by-products and radioactive materials are excluded. Day cases have been defined as having a length of stay of 0. As all deaths, dialysis, chemotherapy transfusion cases are not included in this topic, these should not cause issues with analysis. Furthermore, analysis will only be done for recent years (2020 onwards) to ensure inconsistent reporting between DHBs seen in the 2000's does not affect results. The following hospitalisations were excluded from analysis, as it is not covered by the HSNO Act: • carbon monoxide poisoning from an engine exhaust, BBQ charcoal and cigarette • fumes • sulphur • fire • coal mine gas • phenol derivatives • explosion events • any mains/utility gas events (eg, gas exposure, gas oven where not from an LPG bottle) • cooking oil • smoke inhalation • smouldering plastic
Data source	National Minimum Dataset (NMDS), Ministry of Health
Numerator	The number of unintentional hazardous substances-related hospital discharges.
Denominator	All people in New Zealand using the estimated resident population for the corresponding year (StatsNZ 2020) and NZDep 2018 (Atkinson et al 2021).

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Methodology	**Confidence interval** 95% confidence intervals were calculated based on the methodology outlined in APHO (2008). Confidence intervals are presented as error bars on graphs. **Interpreting graphs (including district graphs)** 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. When comparing groups of varying population sizes, differences that involve small groups may not be statistically significantly different, compared with similar differences for larger groups. This is due to a higher variability associated with the rate of the small group. For a more detailed explanation of this issue, see Appendix 2 – EHINZ Analytical Toolkit & Glossary. For district graphs, tests for statistical significance with the national rate have used adjustments for multiple comparisons. All comparisons made are conservative (ie, the p value is slightly overstated) because the New Zealand estimate contains the district, so the New Zealand and every district estimate are positively correlated. This means that in some instances, we might be slightly less likely to find a significant difference that exists. Age-standardised rates have been calculated using the direct method, using the World Health Organization world population age distribution (Ahmad et al 2000). Prioritised ethnicity has been used, in the following prioritisation order: Māori, Pacific Peoples, Asian, European/Other. Causes of injury were assigned using the external-cause of injury codes. External causes reflect the mechanism of the injury. All diagnoses are classified according to the World Health Organisation's International Classification of Diseases (ICD). A list of external-cause (E code) are included in this analysis and is provided in Appendix 1. The following hospital discharges were excluded from analysis: • transfers within or between hospitals • deaths (defined as 'event end types' DD, DO or ED) • Readmissions have been excluded from the data set. In this report, a 'readmission' is defined as the unintended acute readmission of a patient from any injury within 30 days of discharge. • Admitted from district booking system (used to be known as 'waiting list') assigned as "WN" in the admission type code. Analysis includes only those cases which have listed intent as 'unintentional'.
Time period and time scale	Annual, from 2001 onwards.
Population coverage	All people in New Zealand

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Spatial Coverage	National
Measures of frequency	Results are presented by year, sex, age group, ICD-10-v1 breakdown, ethnicity, substance classifications, NZDep2018 (Atkinson et al 2021) and district.
Limitations of indicator	There is insufficient information to determine the work-related nature of a case from most of the datasets used in the report. Therefore, it is difficult to reliably breakdown hazardous substances-related injury into occupational and non-occupational disease and injuries. Hospital data does not adequately capture chronic disease from a hazardous substance, as the cause of the chronic disease can often not be identified. It is important to note that hospital events recorded in the NMDS represent individual events rather than individual people. The number of events will be higher than the number of people because one person can contribute numerous unique hospital events to the dataset. Reporting of substances involved is based on free text searches of e-code descriptions and diagnosis code descriptions. As a result, misspelled or incorrectly reported substances may be missed during the data cleaning process.
Created by	New Zealand Ministry of Health
Related indicators	Unintentional hazardous substances exposures in children (0–14 years) Hazardous substances notifications Occupational lead absorption notifications in New Zealand Non-occupational lead absorption notifications in New Zealand Hazardous substances-related deaths reported to the coroner in New Zealand
References	Ahmad, O.B., et al. (2000). Age Standardization of Rates: A New WHO Standard (Technical Report). GPE Discussion Paper Series: No. 31. Geneva: World Health Organization. Atkinson J, Salmond C, Crampton P. 2021. NZDep2018 analysis of Census 2018 variables. Wellington: Department of Public Health, University of Otago, Wellington. URL: https://www.otago.ac.nz/wellington/departments/publichealth/otago830998.html APHO. 2008. *Technical Briefing 3: Commonly used public health statistics and their confidence intervals.* York, UK: Association of Public Health Observatories. StatsNZ. 2020. Estimated resident population (2018-based): At 30 June 2918. URL: https://www.stats.govt.nz/information-releases/estimated-resident-population-2018-base-at-30-june-2018#new (Accessed August 2021)

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Appendix 1:

EXTERNAL CAUSE OF INJURY CODES	DESCRIPTION
W39	Discharge of firework
X04	Accidental exposure to ignition of highly flammable material
X08	Accidental poisoning by and exposure to other specified smoke, fire and flames
X46	Accidental poisoning by and exposure to organic solvents and halogenated hydrocarbons and their vapours
X47	Accidental poisoning by and exposure to other gases and vapours
X48	Accidental poisoning by and exposure to pesticides
X49	Accidental poisoning by and exposure to other and unspecified chemicals and noxious substances
X58	Accidental poisoning to other specified factors