

## Poisonings from hydrocarbon inhalant misuse in Australia

INGRID BERLING<sup>1,2,3,4</sup>, ANGELA CHIEW<sup>4</sup>, JARED A BROWN<sup>4</sup>,

<sup>1</sup>School of Medicine and Public Health, University of Newcastle, Newcastle, Australia,

<sup>2</sup>Department of Emergency Medicine, Calvary Mater Newcastle, NSW, Australia,

<sup>3</sup>Department of Clinical Toxicology and Pharmacology, Calvary Mater Newcastle, Newcastle, NSW, Australia, <sup>4</sup>NSW Poisons Information Centre, Sydney Children's Hospitals Network, Sydney, Australia

Presenter's email: [jared.brown@health.nsw.gov.au](mailto:jared.brown@health.nsw.gov.au)

**Introduction and Aims:** Inhalational misuse of volatile substances is of public health concern due to the risk of sudden death and associated chronic complications such as encephalopathy. Australian secondary school students surveyed reported 7% had ever deliberately sniffed inhalants, and 2% reported regular use. We investigated inhalational hydrocarbon exposures or poisonings and related unintentional deaths.

**Design and Methods:** We performed a retrospective review of all inhalational hydrocarbon exposure calls to the New South Wales Poisons Information Centre (NSWPIC) 2010-20 (handles half of the national calls). We searched the National Coronial Information System for all states and territories over the same period to determine the number of unintentional inhalational hydrocarbon related deaths in Australia.

**Results:** Between January 2010 and December 2020 there were 752 primary calls made to the NSWPIC regarding hydrocarbon use or exposure. Age, or age bracket, were recorded in 748 cases, with 508 (67%) calls involving children or adolescents. The number of calls per year were relatively consistent until 2019, when an increasing trend is noted. The most common products were deodorants (n=330), petrol (n=98), adhesives (n=89) and lighter fluid (n=70).

Over 2010-20, there were 45 unintentional deaths involving the use of inhalational hydrocarbons, averaging 4 deaths a year. The median age at death was 23 years (IQR: 14-30yrs) and 69% (31 cases) were male. Cause of death was predominately due to acute suffocation/asphyxia, encephalopathy related to chronic use, cardiac arrest likely from sudden sniffing syndrome or thermal injuries secondary to unintentional fires sparked by the volatile agents.

**Discussions and Conclusions:** Recreational use of hydrocarbons remains a problem, particularly within the adolescent and young adult population. Fortunately, death remains an uncommon outcome, although preventable.

**Implications for Practice or Policy:** Recognition, education and prevention of inhalant misuse remains relevant for practitioners and policymakers to reduce harms.

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