



Vaping and injury

Roisin Sweeney

Research, Evaluation and Practice Lead





Injury Matters acknowledge the Whadjuk Noongar people as the traditional custodians of the land on which we live and work, and recognises Aboriginal and Torres Strait Islander peoples continuing connection to land, waters and community across Western Australia.

Our Reconciliation Action Plan can be found at www.injurymatters.org.au

Artwork by Mel Spillman (Woods) of Maarakool Art



ABOUT INJURY MATTERS

who are we?

**Helping people recover from injuries.
Or, better still, avoid them altogether.**

We're Injury Matters, WA's injury prevention and recovery specialists.

At Injury Matters, we innovate and deliver injury prevention and recovery programs and solutions that empower people, organisations and policymakers across WA to make informed, safer choices.



OUR PROGRAMS

prevention and recovery

STAY ON YOUR FEET®

Move Improve Remove

STAY ON YOUR FEET

Educates community members and health professionals on how to keep active, prevent falls and promote healthy ageing.



ROAD TRAUMA SUPPORT WA

Provides information, support and specialised trauma counselling services for people affected by road crashes with no referral required.



KNOW INJURY

Provides knowledge, training, resources, and networking opportunities for health professionals, local governments, not-for-profits and community organisations to prevent injuries.



Know Injury

Know Injury is a state-wide program which aims to enhance the capacity of injury prevention practitioners and organisations to deliver quality injury prevention activities.

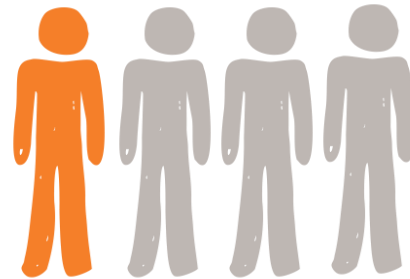
Know · Learn · Connect

Injury in WA



Western Australians die each day from injuries.

Every year 1 in 4 Western Australians report an injury requiring treatment by a health professional.



2023 WA injury deaths



Falls (n=570)



Intentional self-harm (n=417)



Poisoning (n=182)

Australian Bureau of Statistics. Causes of Death (Western Australia), 2023. (2024).

Department of Health Western Australia, Epidemiology Directorate. Health and Wellbeing of Adults in Western Australia 2022. www.health.wa.gov.au/~media/Corp/Documents/Reports-and-publications/Population-surveys/Health-and-wellbeing-of-adults-in-WA-2022.pdf (2023).

How does vaping affect injury?



Poisoning



Burns



E-cigarette or Vaping Associated Lung Injury (EVALI)

Vaping and poisoning

Unintentional or intentional exposure to toxic substances.

What harmful chemicals are in e-liquids?

- Benzaldehyde, menthol, trans-cinnamaldehyde, and polycyclic aromatic hydrocarbons.

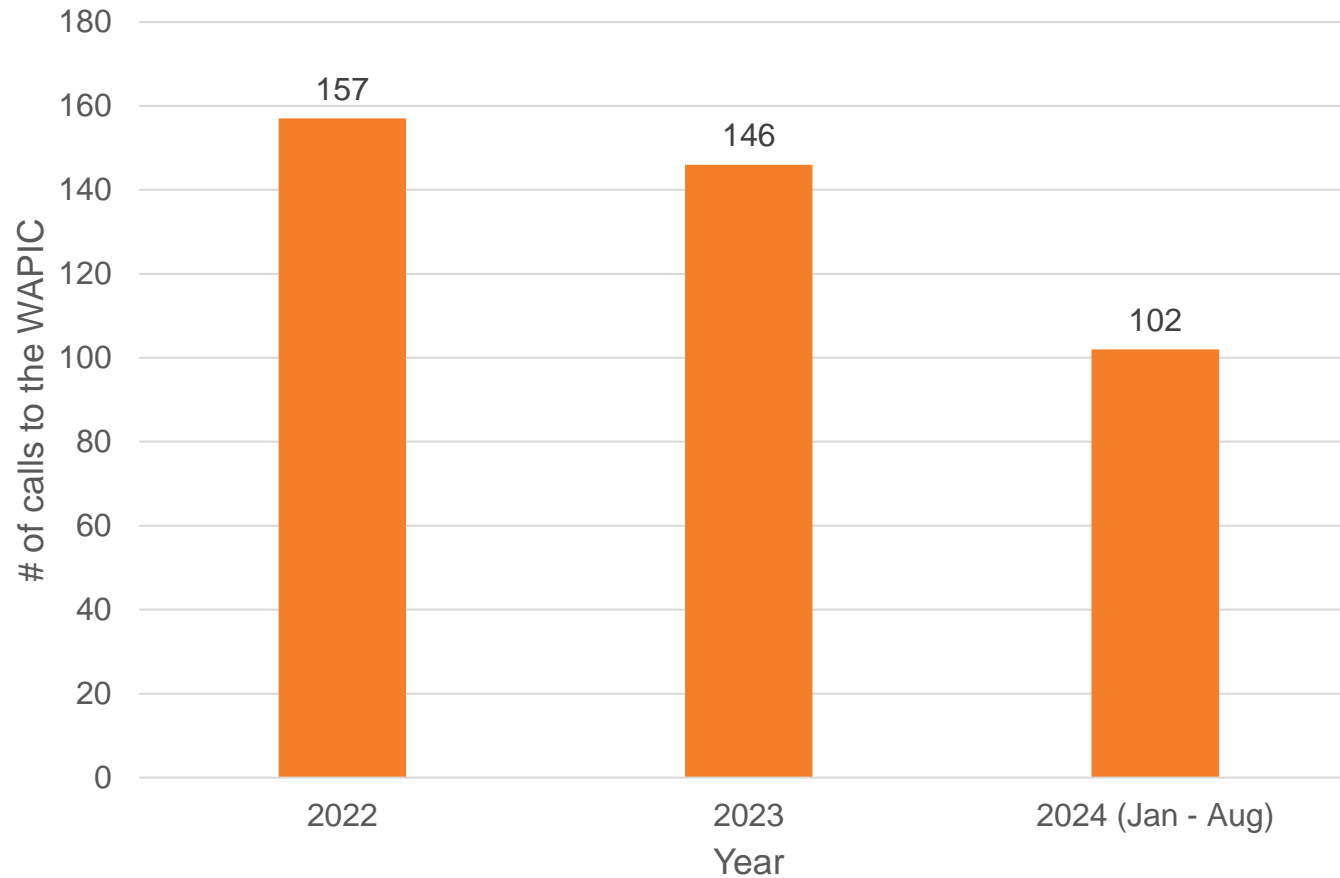
What toxic substances can leach from vapes?

- Lead, arsenic, chromium and nickel.

Banks E, Yazidjoglou A, Brown S, Nguyen M, Martin M, Beckwith K, et al. Electronic cigarettes and health outcomes: systematic review of global evidence In: Health Do, editor. Canberra: National Centre for Epidemiology and Population Health (2022).

Larcombe, A. *et al.* Chemical analysis of fresh and aged Australian e-cigarette liquids. *Med. J. Aust.* 216, (2021).

Vaping-related calls to the WA Poisons Information Centre



Vaping and poisoning



Increasing incidence of nicotine poisoning.



High concentration of liquid nicotine in e-cigarettes.



Liquid nicotine can result in neurological harm, respiratory failure and death.



Second-hand exposure to vaping can be harmful.



E-cigarette emissions can include nicotine, glycerol, propylene glycol, formaldehyde, acetaldehyde and metals.

Banks E, Yazidjoglou A, Brown S, Nguyen M, Martin M, Beckwith K, et al. Electronic cigarettes and health outcomes: systematic review of global evidence In: Health Do, editor. Canberra: National Centre for Epidemiology and Population Health (2022).

Scientific Committee on Health Environmental and Emerging Risks (SCHEER). *Scientific Committee on Health, Environmental and Emerging Risks SCHEER Opinion on Electronic Cigarettes* (2021).

Hess IM, Lachireddy K, and Capon A. A systematic review of the health risks from passive exposure to electronic cigarette vapour. *Public Health Research and Practice*. 26(2), (2016).

Vaping and burns

Causes of burns:

- Exploding batteries/battery damage
- Overheating devices
- Leaking e-liquids
- Fault in the device's construction
- Fault in modifications made to the device

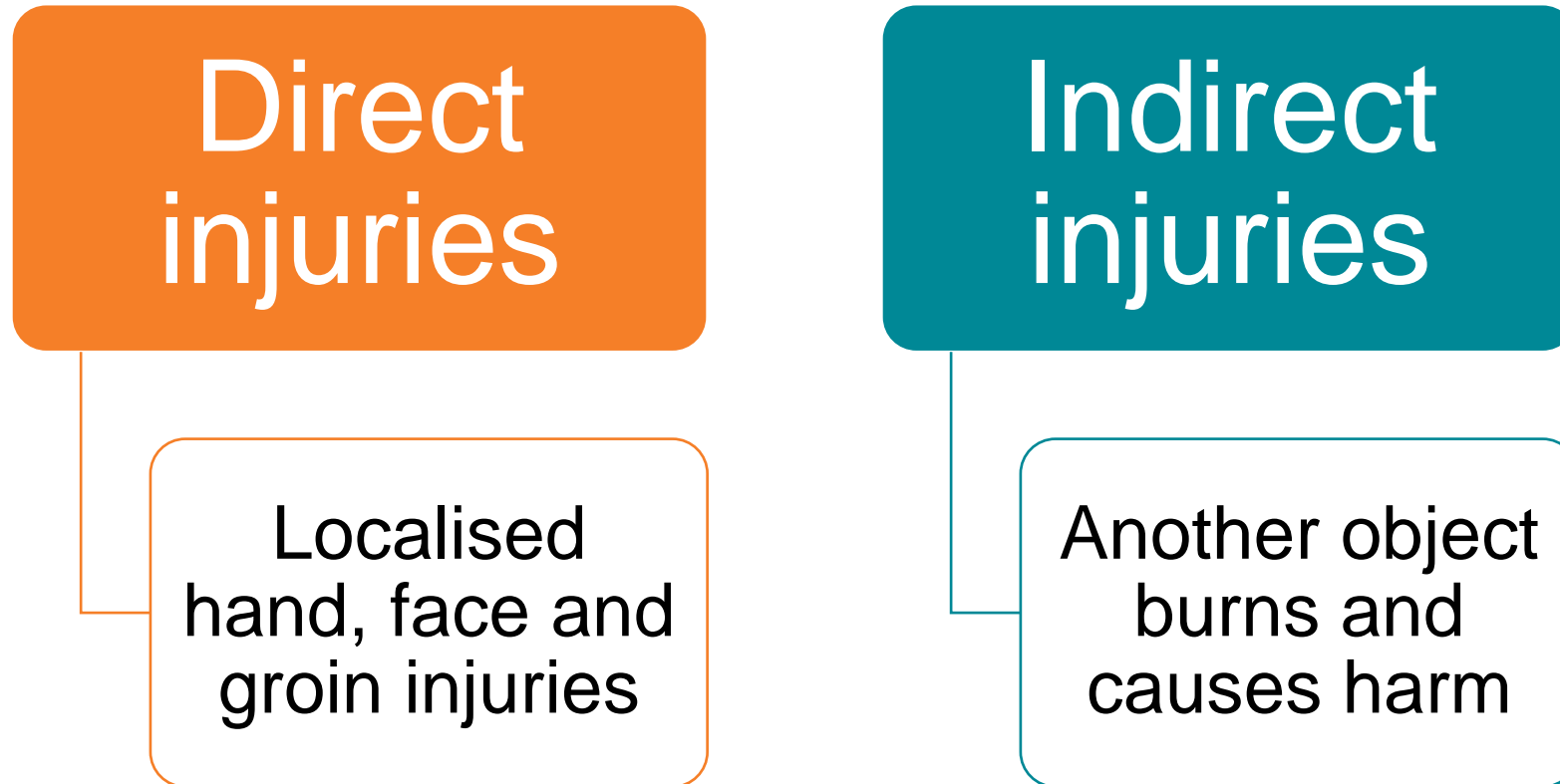


Banks E, Yazidjoglou A, Brown S, Nguyen M, Martin M, Beckwith K, et al. Electronic cigarettes and health outcomes: systematic review of global evidence In: Health Do, editor. Canberra: National Centre for Epidemiology and Population Health 2022.

Ahmed AR, Etchey B, Ahmed M. Explosions, Burn Injuries and Adverse Health Effects of Electronic Nicotine Delivery Systems: A Review of Current Regulations and Future Perspectives. J Pharm Pharm Sci. 24, 462-74 (2021).

Wang B, Liu ST, Rostron B, Hayslett C. Burn injuries related to E-cigarettes reported to poison control centers in the United States, 2010-2019. Inj Epidemiol. 7(1), (2021).

Vaping and explosion injuries



Patterson, S.B., Beckett, A.R., Lintner, A., Leahey, C., Greer, A., Brevard, S.B., Kahn, S.A. (2017). A Novel Classification System for Injuries After Electronic Cigarette Explosions. *Journal of Burn Care & Research*, 38(1), p95–100.

Serror, K., Chaouat, M., Legrand, M. M., Depret, F., Haddad, J., Malca, N., Boccara, D. (2018). Burns caused by electronic vaping devices (e-cigarettes): A new classification proposal based on mechanisms. *Burns*, 44(3),p 544-8.

Brownson, E.G., Thompson, C.M., Goldsberry, S., Chong, H.J., Friedrich, J.B., Pham, T. N., Gibran, N.S. (2016). Explosion Injuries from E-Cigarettes. *New England Journal of Medicine*, 375(14), p1,400–2.

Vaping and burns



Vaping and burns – Steve’s story





“There must have been a perfect storm where the coins touched each side of the battery terminal at the same time and it ignited.”

“The battery burnt through the shorts and fell on the ground, where it was still on fire, with this intense, white light and heat.”

“The worst pain was actually in my hands from when I batted at the flames.”

“It’s pretty scary how much damage these batteries can do in just a few seconds.”

Vaping and EVALI

-  E-cigarette or vaping-associated lung injury.
-  Umbrella term.
-  A heterogeneous collection of respiratory pathology.
-  Evidence of relationship to vapes that contain vitamin E acetate.

Chen, J. et al. All up in smoke: vaping-associated lung injury. *Journal of Community Hospital Internal Medicine Perspectives* 10, 571–578, (2020).

Banks E, Yazidjoglou A, Brown S, Nguyen M, Martin M, Beckwith K, et al. Electronic cigarettes and health outcomes: systematic review of global evidence In: Health Do, editor. Canberra: National Centre for Epidemiology and Population Health. 2022.

Krishnasamy VP, Hallowell BD, Ko JY, et al; Lung Injury Response Epidemiology/Surveillance Task Force. Update: characteristics of a nationwide outbreak of e-cigarette, or vaping, product use associated lung injury, United States, August 2019 – January 2020. *69*: 90-94 (2020).

Vaping and EVALI



Symptoms include:

- Shortness of breath, fever, cough, vomiting, headache, dizziness, rapid heart rate and chest pain.



How is EVALI diagnosed?

- Vaping history and chest x-ray or CT scan.



Chen, J. et al. All up in smoke: vaping-associated lung injury. *Journal of Community Hospital Internal Medicine Perspectives* 10, 571–578 (2020).

Sund, L., Dargan, P., Archer, J. and Wood, D. E-cigarette or vaping-associated lung injury (EVALI): a review of international case reports from outside the United States of America. *Clinical Toxicology*, 61(2), 91-97. (2023).

Marrocco, A., Singh, D., Christiani, D. & Demokritou, P. E-cigarette vaping associated acute lung injury (EVALI): state of science and future research needs. *Critical Reviews in Toxicology*, 52(3), 188–220. (2022).

What can we do?



Reduce the overall availability and use of vapes.



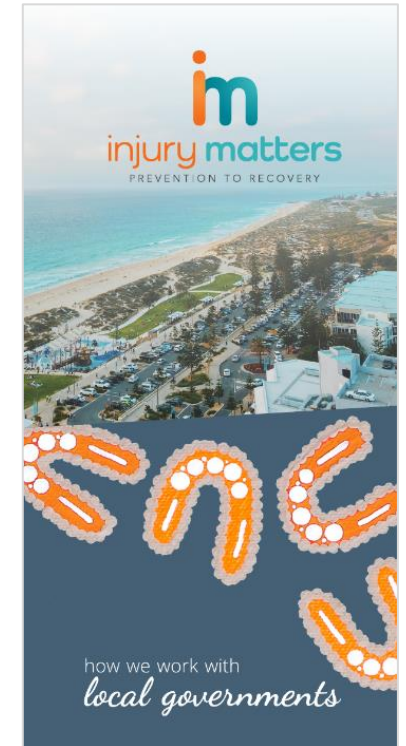
Apply unintentional burns and poisoning evidence to vaping safety.



Raise awareness of the harms that can come from vaping.

How we support local governments

- Injury Data
- Identifying injury and safety promotion priorities
- Community consultations and stakeholder/reference groups
- Collaboration – development and delivery of interventions
- Education and Training
- eNews
- Networking
- Resources
- Website



[How we work with Local Government Brochure](#)



**Local Government Guide to
Promoting Safety and
Preventing Injury**



Helping people recover from injuries.
Or, better still, avoid them altogether.

NEW RESOURCE COMING SOON

CONNECT WITH US



www.injurymatters.org.au



(08) 6166 7688



info@injurymatters.org.au



2/297 Vincent Street Leederville, WA

@InjuryMatters

