

EV BATTERY FIRES - VAPOUR CLOUD EXPLOSION

Global incidents & risks of vapour cloud explosion

What is VCE?

The violent & instant deflagration of venting toxic, flammable gases from a lithium-ion battery in thermal runaway.

Risk of VCE occurring

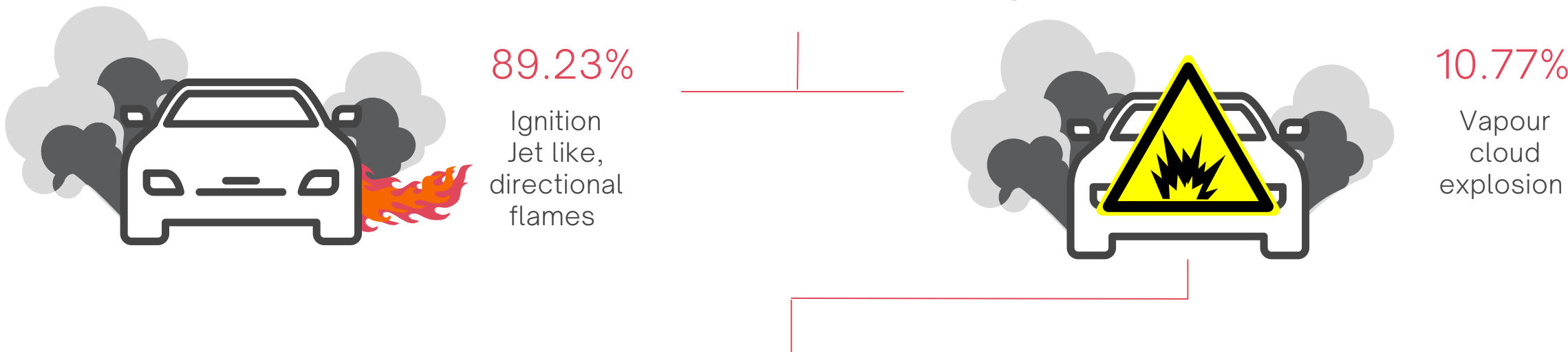
VCE incidents were only included in our dataset when verified from two sources stating the words 'explosion', 'gas explosion' or similar.

Verification of VCE

In verified incidents from 2010-2020, VCE occurred in 10.77% of incidents.

Ignition vs explosion

Toxic & flammable gases create a vapour cloud, releasing approx 700L of vapour per 1kWh of battery capacity. In cases researched, once thermal runaway occurs, the chance of ignition vs vapour cloud explosion was:



All EV battery fire incidents with vapour cloud explosion, 2010-2021 (click on images for images & videos)

2018	Chongqing, China Tesla (Model unknown) Parked Underground Not charging Cause unknown				
2019	Shanghai, China Tesla Model S Parked Underground Not charging Cause: 'Single battery module located in front of vehicle'	Hong Kong, China Tesla Model S85 Parked Underground Not charging Cause unknown	Montreal, Canada Hyundai Kona EV Parked Home garage Not charging Cause: possible battery fault Blew garage door off	Gyeonggi Province, South Korea Hyundai Kona EV Parked Outside Not charging Cause: possible battery fault	Moscow, Russia Tesla Model3 Driving, collision Outside Not charging Cause: collision with parked tow truck
2020	Xinyu, Jiangxi, China Unknown EV Parked Outside at dealership Charging Cause: unknown Injuries to driver	Tangwei, Shenzhen, China Ark Weitu Z35 electric van. Parked Outside Charging Cause: unknown	Temecula, California, US Chevrolet Bolt EV Parked Home garage Charging Cause: unknown	Shanghai, China BYD Yuan Parked Residential apartment garage Charging Cause: unknown	Fujian Province, China BAIC EX360 Parked Open sided carport Charging Cause: unknown Blew doors & debris through carport
2021	Shanghai, China Tesla Model S Parked Underground residential Not charging Cause: battery module fault		Zhongshan, China Chery Arrizo E Parked Underground residential Charging Cause: unknown		San Ramon, California, US Tesla Model S85 Parked Home garage Charging Cause: unknown Blew garage doors off

Of identified VCE incidents:

