

A Warning to Hospitals

Plus care centres, hospices, surgeries and clinics

Introduction

This paper is an urgent request, from a regular hospital patient, to the relevant powers in the NHS to consider new protocols to cater for an immediate (but unconsidered) hazard. The problem is the presence of dangerous Li-Ion (lithium-ion) batteries in motorised wheelchairs and mobility scooters, plus a few other devices.

These are regularly parked on hospital premises. For example, motorised wheelchairs, belonging to a renal patient, are parked outside the ward where the patient is treated, in a corridor for over four hours, three times a week. I will show, in this paper, that this is a dangerous practice that will eventually lead to a tragedy.

What is the problem with Li-Ion batteries?

Explosions

These batteries regularly degrade, through various means, and explode with the force of a bomb, emitting 2,000-degree C blasts of flames.¹ This is sufficient, not just to cause fires but, to melt surfaces and decompose structures, such as metal and concrete. In addition toxic fumes are thrust out.

Runaway fires

It is impossible to put such a fire out quickly, if at all. EV fires have continued burning for hours and days despite several fire appliances pouring water onto them continually. Battery fires involve 'thermal runaway', a chain reaction releasing violent explosions of stored energy, shards of projectile material and flammable / toxic gas. One reporter stated, '*They explode as if packed full of toxic dynamite*'.² One study showed that an E-scooter explosion had the force of six hand grenades.³ Wheelchairs have bigger batteries and thus more stored energy.

Such fires are increasing daily. EV fires rose 46% in the past year⁴ and there are three battery fires a day in the UK. In the last year there were 270 fires involving an electric bike. 125 involving an electric scooter. 118 involving an electric car. 22 involving an electric bus and 12 involving an electric truck. No one is recording wheelchair fires.

¹ I acknowledge some data from The Daily Sceptic, Chris Morrison, 'Electric vehicle explosions rise 46% in a year', 27 September 2024.

² News.com.au, Jamie Seidel, 'China bans electric vehicles from underground car parks', 14 September 2024.

³ Mail Online, Helen Carroll, 'The deadly e-bombs in Britain's homes; How e-bikes and scooters carry batteries with the stored energy of six grenades', 1 August 2023. Rayo, Sian Roche & Chris Maskery, 'Batteries for e-bikes and scooters contain energy of six hand grenades', 27 July 2023. Report by Electrical Safety First (ESF).

⁴ QBE insurance.

Toxic gases

The toxic gases emitted from EV fires include: hydrogen fluoride, hydrogen chloride, hydrogen cyanide, carbon monoxide, sulphur dioxide and methane. This cocktail will kill you within seconds.

As the public is becoming aware of these problems, EV car sales are falling off a cliff. EV sales fell by 44% in the EU in August, the fourth consecutive monthly drop.

Examples of previous explosions

E-buses

- A bus garage containing EV buses had one vehicle explode setting off all the other vehicles in a London depot.⁵ The entire bus station was destroyed. There is video footage of this. Another example was in China.⁶ There are dozens of videos of this on YouTube.

EV cars

- A private EV was being charged outside a domestic home when it exploded on the drive. It burned the house to the ground. There are multiple cases of this.
- A cargo ship full of high-end vehicles had an EV explode while at sea. The cargo ship sank.⁷
- Another cargo ship had an EV explode which killed a sailor, injured 21 and forced the rest of the crew to jump overboard.⁸
- There have been multiple cases of an EV exploding in a multi-storey car park, which destroyed the entire facility and all cars within it.⁹ The Luton car park disaster was caused by a Range Rover hybrid (proved by video evidence).
- In 2023 several fires broke out on ferries. On the *Freemantle Highway* vessel a crewmember died and the vessel was gutted.¹⁰ The first EV fire on a ferry occurred in 2010 on the *MS Pearl of Scandinavia*.

E-scooters

- You can see footage of an electric scooter exploding in a Chinese person's flat. He had seconds to escape and flee; the flat was destroyed. There are many examples of scooters exploding, including in London.¹¹ One incident killed two people.¹²

E-bicycles

- An E-bicycle exploded '*like a grenade*' and destroyed a family home in Lancaster.¹³

⁵ YouTube, 'Electric bus on fire after huge explosion at London transport depot'.

⁶ YouTube, 'Electric bus bursts into flames, sets nearby vehicles on fire in China'.

⁷ Euro News, 'Massive cargo ship carrying electric cars sinks in Atlantic Ocean after fire'.

⁸ Mail Online, Miriam Kuepper, 'Sinking cargo ship carrying more than 3,700 cars is still burning at sea two days after fire caused by electric car broke out killing one crew member', 28 July 2024.

⁹ Korea Joongang Daily, '21 injured after Mercedes EV explodes in parking lot', 3 August 2024. This was an underground parking lot in Incheon. The vehicle fire took eight hours to extinguish.

¹⁰ The Royal Institution of Naval Architects, 'Ferry companies grapple with rising threat of EVC fires', 15 November 2023.

¹¹ YouTube, 'CGTN, E-scooter explodes while charging inside apartment in China'. BBC, 'E-scooter bursting into flames in a London home caught on video, 18 May 2023.

¹² Newsweek, Thomas Kika, 'Urgent warning issued for electric scooter after fire kills two'. 23 October 2023.

- A mother of four was killed when an E-bicycle exploded in her bedroom.¹⁴ She died from 60% burns and jumping from a window.

Examples of authorities banning EVs

- The Norse ferry company Havila Kystruten has banned all EVs (including hybrids) from travelling on its ferries.
- Many authorities have banned EVs from parking in underground car parks beneath blocks of flats.¹⁵
- Many insurance companies will no longer insure EV cars.
- Cargo ship companies are now banning EVs from their ships.

The scenario in a kidney unit; example Brighton

An EV explosion in a kidney unit would be nothing short of catastrophic. The death toll would be huge. I have exemplified the severity of an E-scooter explosion, but the battery in such is smaller than the battery in an E-wheelchair. An exploding wheelchair would create a much bigger explosion and emit more gases than an E-scooter.

Battery operated wheelchairs are often stored directly outside the door into a dialysis ward. If this wheelchair exploded it would first prevent anyone escaping that ward as no one could pass the intense heat and the exploding projectiles. Everyone in that room would perish.

The explosion and intense heat would set fire to the entire unit but the severity would give little time for escape. Sprinklers would have no effect on the battery fire, which self-generates. People near the fire would have seconds to run as fast as they could. Renal patients on dialysis would be left to burn. People in wards further away may have more time to escape but not enough time to get patients off dialysis before being overcome by fumes.

The highly toxic fumes given off by the runaway heat would fill the whole unit within a few minutes. Anyone breathing those fumes will die. Fleeing people would have very few minutes to escape. Everyone left behind (all dialysis patients), even if distant from the flames, would die from the gases.

The entire unit would be destroyed. Fire-fighters cannot stop battery fires. Regarding a battery fire in Brighton Kidney Unit: how would fire-fighters even get near the fire to extinguish it? Access for even one appliance is almost impossible; access by ladder is near impossible and the noxious gases would prevent gaining access internally.

The resultant enquiry would be seeking whom to blame. The blame will lie upon the authorities that failed to prevent this happening by banning battery vehicles from the unit.

¹³ Sky News, Tom Acres, 'E-bike battery exploded like grenade and fire ripped through family home – as calls grow for regulation', 27 July 2023.

¹⁴ Mail Online, Helen Carroll, 'The deadly e-bombs in Britain's homes; How e-bikes and scooters carry batteries with the stored energy of six grenades', 1 August 2023.

¹⁵ News.com.au, Jamie Seidel, 'China bans electric vehicles from underground car parks', 14 September 2024.

The media cover-up

The mainstream media has made great efforts to hide details of EV fires and explosions and has published articles stating that they are rare. This is a lie. Fires from internal combustion car engines are rare. Fires from EVs are common and increasing every year. Statistics should be found in factual sources such as insurance claims and insurance investigations where business survival is determined by the truth.

Preventative protocols

Existing regulations

Note that authorities already demand that battery-wheelchairs and mobility scooters are stored away from access areas and must be fully risk-assessed.¹⁶ How many hospitals are complying with this? If a fire broke out and people died, those in authority in the hospital would be guilty of manslaughter by negligence. Premise managers must also consult their insurance provider.

Suggested new protocols

Dedicated parking facility

The only way to stop a tragedy like this happening is to prevent it by banning the parking of battery wheelchairs in the unit.

Parking areas should be established, preferably near to the open air, in bays where they can be secured. This should be in a cool place. Hospital wheelchairs should then be utilised by ambulance crews to take patients to their appointed places. This slight inconvenience to a very few patients could save many lives. E-devices must never be allowed to be stored on escape routes, access routes, or corridors near wards.

Banning of other battery vehicles

Mobility scooters, E-scooters and similar vehicles, should be banned from being on hospital premises.

Charging banned

Never allow anyone to charge their e-device on hospital premises.

Car parks

Consideration should be given to EVs parked in multi-storey hospital car parks. One exploding EV could bring the whole structure down. If part of the hospital architecture, it could destroy the whole hospital building. The wise move would be to ban EVs from hospital multi-storey car parks.

Transport

The question of battery-wheelchairs in patient transport is also a problem.

If a wheelchair exploded in an ambulance everyone else in it would die.

¹⁶ E.g. Gov.uk, Dept for Transport, Guidance, 'E-cycle and e-scooter batteries: managing fire risk for premises'. Devon and Somerset Fire and Rescue Service, 'Fire safety for battery-powered mobility scooters and wheelchairs'. London Fire Brigade, September 2023, 'Fire safety guidance Note GN103: charging and storage for electric-powered personal vehicles'. Regulatory Reform (Fire Safety), Order 2005.

If the wheelchair began smouldering and preparing to burst into flames or explode, occupants would have seconds to park the ambulance and run – but many patients cannot even walk. There would be no time to unstrap the wheelchair patient.

Should battery-wheelchairs even be allowed in patient transport at all? I would say not.

Conclusion

The threat of danger from Li-Ion batteries is too severe to ignore. There only needs to be one incident for scores of people to die. A battery fire in the Brighton Kidney Unit for example would probably kill upwards of 40 people. If the fire destroyed the whole building it would kill many more. The loss of dialysis facilities would then kill about 176.

The Grenfell fire was a similar case. The dangers were well known, nothing was done and one fire killed 72 people that need not have died. Eventually people will go to jail for this crime.

Resources

- Fire Technology, Peiyi Sun et. al., 'A review of battery fires in electric vehicles', January 2020.
- The Daily Sceptic, Chris Morrison, 'Electric vehicle explosions rise 46% in a year', 27 September 2024.
- MetroSTOR, 'The fire risk of storing and charging mobility scooters in residential buildings', 10 July 2019.
- Gov.uk, Home Office, Guidance, 'Fire safety risk assessment: means of escape for disabled people'.
- Gov.uk, Dept for Transport, Guidance, 'E-cycle and e-scooter batteries: managing fire risk for premises'.
- London Fire Brigade, September 2023, 'Fire safety guidance Note GN103: charging and storage for electric-powered personal vehicles'.
- FSRI (US Fire Safety Research Institute), 'Examining the fire safety hazards of Lithium-Ion battery-powered e-mobility devices in homes'.
- NFCC (National Fire Chiefs Council), 'E-bikes and e-scooters fire safety guidance'.