**Electric Vehicle Battery Safety and Fire Risk Toolbox Talk**

There are specific risks associated with electric and hybrid vehicles that are not the same as for combustion engine vehicles. The main risks relate to the battery and electrical components of your vehicle’s engine and onboard computer.

Electric car batteries are very high voltage, typically 400 volts and 800 volts are the norm. There is a risk of fire occurring if the battery becomes damaged or a fault occurs. As a driver of an electric vehicle you should be aware of this possibility but please understand that the risks are low.

The reality is that:

* There is a risk of any type of vehicle developing a fire
* Based on London Fire Brigade data there is a 0.04% chance of a petrol or diesel car fire compared to a 0.1% chance for a plug-in vehicle fire
* Incidences of plug-in vehicle fires are very low and should not be over exaggerated

**The occasions most likely to result in your EV catching fire are:**

1. During charging, due to either a battery fault or charger cable/part fault which can result in the battery over heating or an electrical surge incident
2. In road collisions that damage the battery and cause it to ignite, this can cause thermal runaway

To reduce the risk of battery fires or electrocution most EVs use circuit breakers that disconnect the high voltage battery system when an impact is detected.

**How to minimise fire and electrocution risk from EV charging**

* Maintain your EV following manufacturer guidance, ensuring your battery is kept in good condition
* Keep charging equipment in good condition and ensure that you receive training on safe charging procedures
* Follow the company fire risk assessment in respect of charging vehicles on company premises

**What to do if a fire starts in your vehicle?**

* If your EV is on fire or you can see smoke escaping call emergency services don’t attempt to assess the condition of the high voltage battery yourself
* Keep clear of the vehicle and electric cables as there is often no indication of the absence of a voltage, and manual deactivation of the high voltage system will be completed by a recovery specialist following manufacturer instructions
* If your vehicle’s airbags have been triggered or the crash sensors have been activated the high voltage battery will disconnect from the traction system
* There can be risks due to electrical arching or possible electric shock so do not touch your vehicle

**What is thermal runaway?**

* Thermal runaway is a cycle in which excessive heat keeps creating more heat and is the chief risk for battery technology
* Causes of thermal runaway include cell defects, overvoltage, or mechanical failure all which can result from a collision damage
* The high temperatures and gas build up leading to the battery cell potentially rupturing causing fire and/or exploding
* After any road incident your EV will be monitored whilst in storage and awaiting assessment for repairs
* Your battery may seem undamaged from the outside, but there can be chemical reactions taking place and ‘thermal runaway’ can occur inside the battery which can cause a delay to fire breaking out or an initial fire to reignite post collision

# Key Points to Remember

# EV vehicles are as safe, if not safer, that the internal combustion vehicles they are replacing

# By following manufacturer guidance and your company policy on EV maintenance, charging and collision management you will keep yourself and any passengers safe

* Never charge your vehicle using damaged cables or if the charge point is damaged
* Collision damage to a high voltage battery may not be obvious at the time of an incident. Battery fires can break out after a delay and ignite whilst your vehicle waits for repairs.

# Driver’s discussion questions

#  Have you heard of the term ‘thermal runaway’ and that it may cause a battery fire?

# Do you know how to check your charging equipment to avoid injury or vehicle damage?

# Have you read the manufacturer guidance on your EV vehicle maintenance?

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