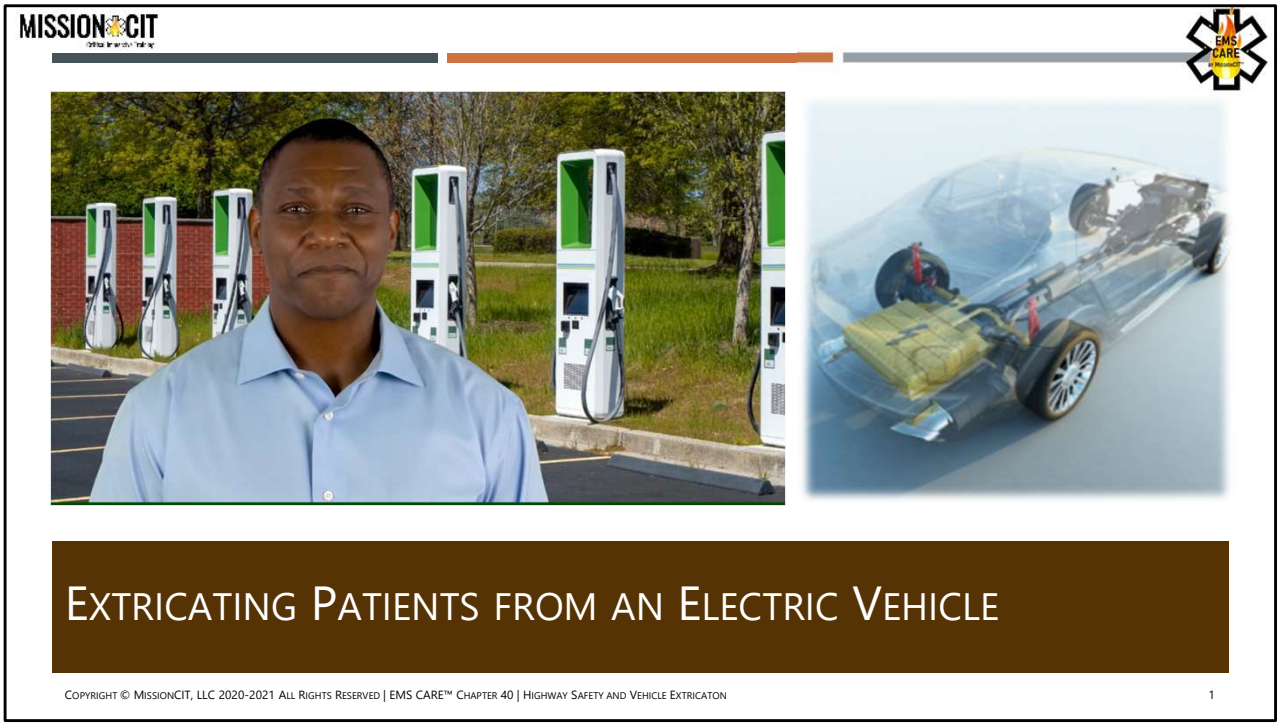
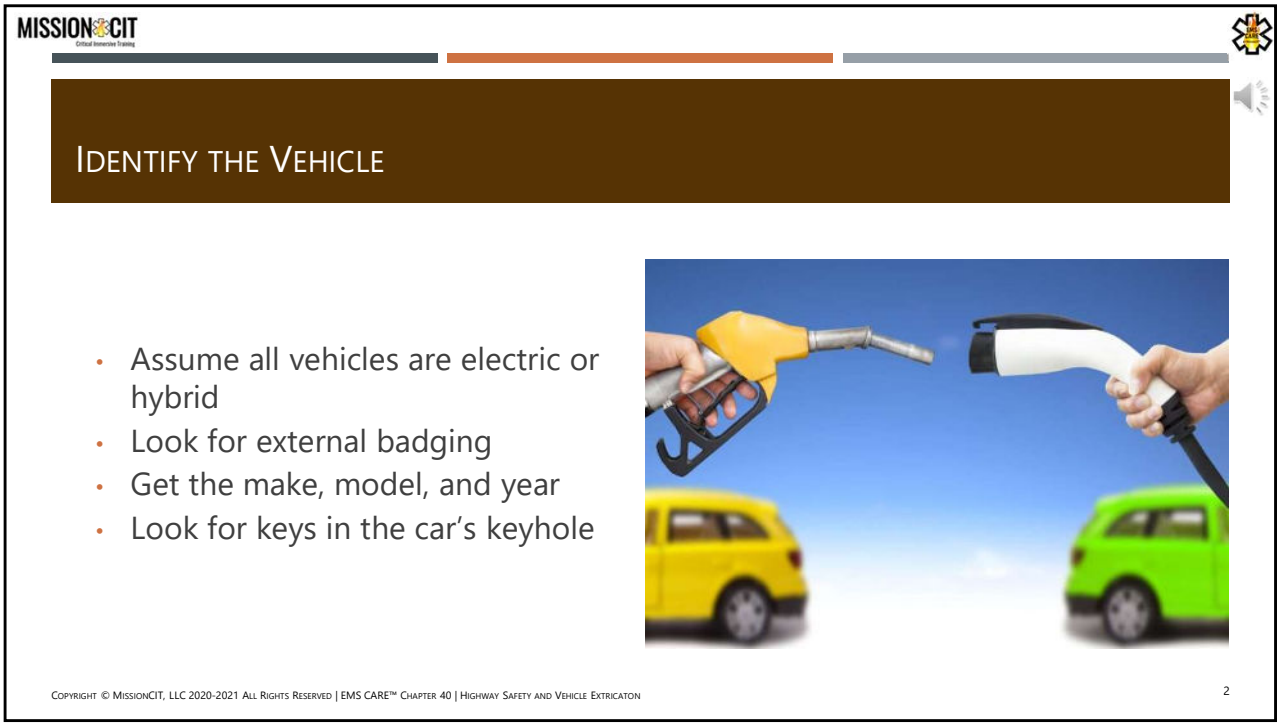


Thank you, Missah!

The last few years have seen a big jump in the use of electric and hybrid vehicles that work a bit differently from the traditional gasoline-powered cars. This means the extrication precautions also vary and that's why in this lesson, we will be talking about them in-depth.



With so many cars on the road, it may not be easy to identify an electric or hybrid car from a gasoline-powered one. That's why assume that all vehicles are electric or hybrid unless otherwise proved.

Some of the aspects you can look for to help identify electric vehicles are:

- As a first step, look for external badging that shows that this is an EV. But sometimes, this may be hard to find, especially if the car is damaged. So, get the

make, model, and year to determine.

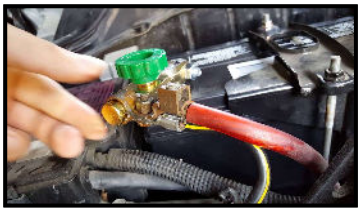
- Another good option is to look for keys in the car's keyhole. Most EVs and hybrids tend to be keyless.
- Either way, it helps to learn about the different cars and models, especially if you're regularly involved in such rescues and extrications.

Immobilize and Disable the Car

- Never approach the car from the front, do it only from the side
- Chock the wheels. Set the parking brake and move to parking mode
- Disable or turn it off
- Look for a proximity key
- Disconnect the 12v battery
- Take precautions







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Once you have determined that this is an EV, take steps to immobilize and disable the car.

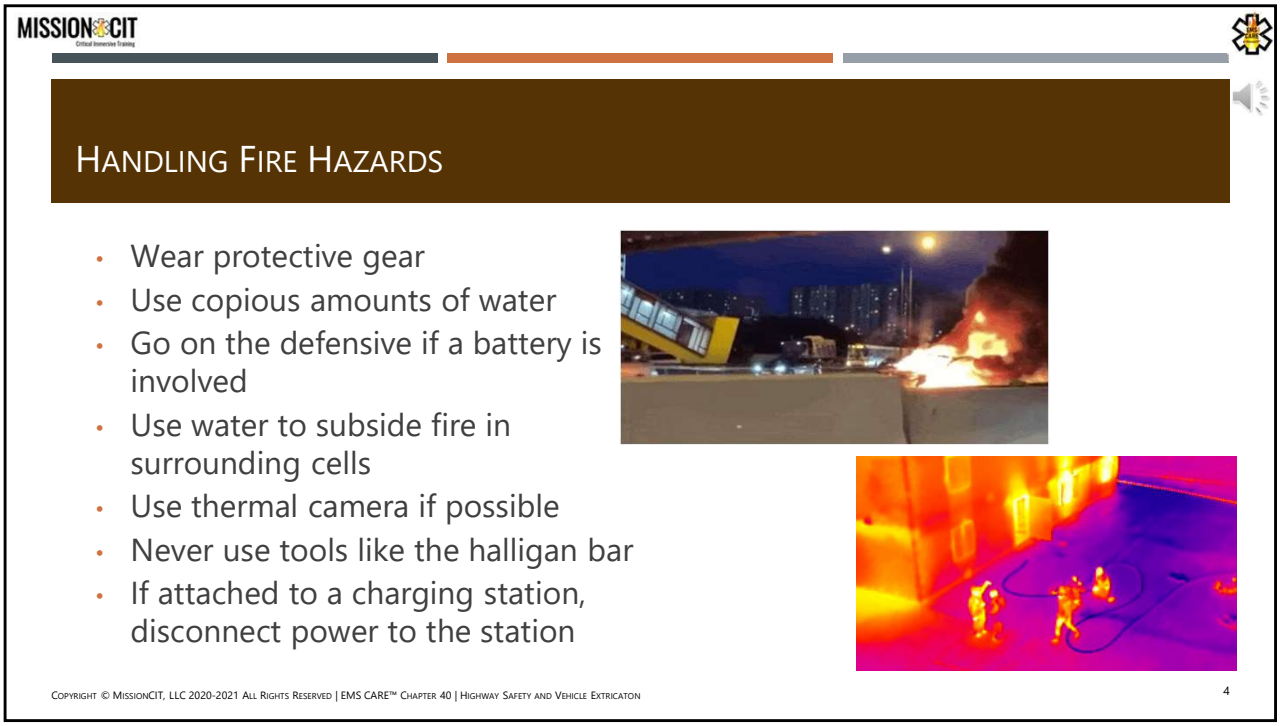
First off, immobilize the car before you start working around them. Remember, electric vehicles may appear to be shut down even when they are not because they emit no noise at all. So, never approach the car from the front, but do it only from the sides to stay out of its potential path of travel.

Also, chock the wheels to prevent them from moving. Further, if you can access the inside of the car, set the parking brake, and put the vehicle in parking mode.

Now that you have immobilized the car, it's time to disable or turn it off.

The easiest way to do this is to turn off the vehicle’s ignition. Some vehicles may have a proximity key, so see if you can find it. Otherwise, simply disconnect the 12v battery. Learn how to do it because this can have serious consequences if you do it wrongly. In case you’re not sure, access the car’s manual to see how it can be done.

While doing these initial operations, never disconnect or contact any exposed high voltage components or wiring. Likewise, never breach or remove the high voltage battery as this can cause severe electrical burns, shock, and even electrocution.



Extinguishing fires in an electric vehicle can be very different.

To handle them, the firefighters must have protective gear and self-contained breathing apparatus before approaching vehicle fires. Use the firefighting agents recommended for electric vehicles, and this information is often a part of your local laws and protocols. Electric car manufacturers typically suggest using copious amounts of water to extinguish fires emanating from an

electric or hybrid vehicle.

If the fire does not involve a high voltage battery, a typical offensive attack is your best step forward. However, if a battery is involved, go on the defensive and allow the battery to burn itself out, as this is considered to be the most effective option. This is also the most logical course of action if the battery is sealed as it may be impossible to directly apply water to the battery. Still, some protocols suggest pouring water around the battery case to cool the adjacent cells and bring them below the ignition temperature. Make sure you check the local protocols.

That said, you must continue to take efforts to extinguish the fire raging around the battery pack. If possible, use a thermal camera to know when the battery has completely burned out.

A word of caution here. If you’re opening the hood of the car, never drive any tools such as the halligan bar as this can pierce the inverter or converter unit.

If the vehicle has caught fire while it is attached to a charging station, treat it like a typical energized electrical fire and turn off the power to the charging station.

Handling Water Submerged Vehicles

- No risk at all by design
- Follow the regular extrication process
- Never touch high-voltage components
- Bubbles and fizz are common, but water is not energized
- Freshwater – Hydrogen and oxygen
- Saltwater – Chlorine



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5

When an electric or hybrid vehicle is submerged in water, it poses no risk at all because it is designed that way. So, their electrical systems will not energize the surrounding water, and this means, it's safe for you to enter the water.

If there are patients caught inside the water, follow the regular extrication procedure to get them out. Refrain from touching any high-voltage components or wiring and if possible, remove the car from the water before

doing the disabling procedures.

Just to know that you may see bubbles or fizz in the surrounding water. There is nothing to worry about as the high-voltage battery will be discharged after the fizzing stops. In freshwater, this process produces hydrogen and oxygen while in saltwater, it produces chlorine.

With this, we come to the end of this lesson and in the next one, Missah will talk about the emergency medical care you must provide for the extricated patients.