CIGARETTE BUTT ON FREEWAY CAUSES VEHICLE FIRE

Of the hundreds of car fires that I have investigated over the past 26 years, I thought I had seen about every possible cause. However, I was quite surprised at the findings from this investigation. Just when you think you know it all - you realize how much you don’t know.

In this case, the woman was driving her new car (only 3000 miles on it) on the freeway, when she noticed a loss of power and smoke coming from the engine compartment. She applied her brakes but could not stop even with the emergency brake. She was able to slow down and jump out through the driver’s door while her burning car continued to roll down the exit ramp. The flaming vehicle rolled through an intersection and struck another vehicle, finally coming to rest and still on fire. The fire department responded and extinguished the fire. The burned remains of the vehicle at the scene are shown in Photo 1.

BEI was retained to determine the origin and cause of the fire. Burn pattern analysis indicated the fire originated at the left rear of the engine compartment (Photo 2).

Research revealed the vehicle was subject to a manufacturers recall due to defective air filter elements that are prone to igniting when coming into contact with smoking materials. The recall stated:

ON CERTAIN VEHICLES, IF A SUFFICIENTLY HOT OBJECT (such as a cigarette ash) ENTERS THE AIR FILTER HOUSING THROUGH THE ENGINE FRESH AIR INTAKE SYSTEM AND CONTACTS THE ENGINE AIR FILTER, THE FLAMMABILITY CHARACTERISTICS OF THE AIR FILTER MATERIAL ARE SUCH THAT THE FILTER MAY IGNITE. IF THE AIR FILTER MATERIAL IGNITES, A FIRE MAY OCCUR.

The corrective action included replacement of the air filter and installation of an air deflector in front of the engine air intake opening to reduce the intake of debris.

Note: Case studies are sanitized for confidentiality and represent examples of actual events.
BEI opined based on the circumstantial evidence (recall information and witness statements) and physical evidence (burn patterns) that the most likely cause of this fire was due to ignition of the air filter element by a hot object (such as a cigarette ash or butt).

Further corroborating evidence included the driver’s statement that she lost braking power soon after she observed smoke coming from the engine compartment. This information was consistent with a fire progressing from the air filter housing to the plastic brake fluid reservoir, which was located in close proximity to the air filter housing (Photos 3 to 5). In addition with the vehicle being driven at highway speeds, the air flow in the engine compartment would push fire from the air filter housing to the rear and overheat the brake fluid reservoir, which would cause loss of braking and fuel load to the fire.

With the BEI report and findings, the insurance carrier was able to pursue subrogation against the vehicle manufacturer for this loss.

Photo 1: Burn damaged vehicle at scene after having exited the freeway while on fire.
Photo 2: Overall view of burn damage in engine compartment. Red arrow depicts area of origin at left rear of engine compartment.

Photo 3: Here is the exemplar (non-burned) engine compartment. The plastic air cleaner housing is at the left rear (red arrow) near the brake fluid reservoir.
Photo 4: Close-up view of air cleaner housing (red arrow) and brake fluid reservoir (yellow arrow)

Photo 5: Combustible air filter element