Evaluating and Litigating the Fuel-Fed Fire Case

by J. Kent Emison

Auto manufacturers have fallen inexcusably short in their efforts to prevent fuel fed fires, in spite of the fact that technology advances have improved today's cars greatly. Some cars are advertised to drive for you, some identify upcoming hazards in the roadway, and some even remind you when you need a coffee break.[1]

But actions litigated in the area of fuel-fed fire matters have found success when plaintiffs have shown instances where auto manufacturers comply merely with the minimum Federal Safety Standards.[2] In this article we will show what to look for to evaluate the potential merits of a vehicle fire case, and what auto defects can lead to vehicle fires.

I. Evaluating the Potential Vehicle Fire Case

Cases against auto manufacturers have proven to be successful when plaintiffs show that manufacturers have chosen profits over safety when it comes to improving their fuel system integrity. The infamous "Ivey Memo" was one such cost/benefit analysis that General Motors conducted.

A "value analysis" examining the cost of fire-related fatalities was prepared by an advance-design engineer for General Motors in the early 1970s. This study concluded that the company could save $2.20 per new car if fuel-fed fires in all accidents were prevented. A former engineer and expert for General Motors explained that

> "[this] Value Analysis says all we have got is $2.20 to play with, if you will. We can either put that money in a fuel tank, put that money in a fuel pump, put that money in a fuel line, but in our opinion in order to save these people from dying we can only put $2.20 into the new cars."

The Ivey Memo was first introduced in a trial in *Baker v. General Motors*.[3]

General Motors challenged the testimony of its former fuel system engineer, Ronald Elwell, all the way to the United States Supreme Court. The U.S. Supreme Court unanimously held that Mr. Elwell was properly allowed to testify.

Since the early 1970's, manufacturers have admitted that motorists should not survive a crash and then burn to death in a fuel fed fire. If there is a burn injury or death from fire-related injuries in a survivable crash, there is potentially a legitimate case against the manufacturer. In these cases, the vehicle must be preserved for further evaluation by a qualified fire cause and origin expert and a fuel system design expert.

If a death or deaths are involved, autopsies are obtained to determine whether the fire contributed to the cause of death. Pathologists are very good at determining if thermal injuries contributed to causing a death. One note to be aware of in this type of auto litigation: where a vehicle fire is involved, it is common for the victim to have a very low level of carbon monoxide (CO). Sometimes the CO level is noted as "none detected" even though there are witnesses who confirm the victim was alive after the impact and obviously died from fire related injuries.

The recurrent fact in these cases is that auto manufacturers have the knowledge and technology today to prevent post-collision fuel fed fires in survivable crashes. Yet vehicle fires continue to severely injure and kill thousands of people every year. The National Fire Protection Association estimated in 2012 that an average of 152,300 auto fires occur in the U.S. each year, resulting in an average of four deaths every week.

II. Potential Defects

This type of auto litigation can seem mysterious because to the naked eye, the principles that come into play in these cases are not immediately apparent. For instance, some would assume that if there is no visible hole in a fuel tank, then gasoline could not be involved in causing the fire.

But while a fuel tank puncture is certainly involved in a multitude of vehicle fires, there are other causes of vehicle fires. These include: fuel tank seam splits, filler-neck defects; check-valve defects; and siphoning defects. Each of these are described below.

A. Hidden fuel tank leaks

It is very common for fuel tank leaks to be hidden after a crash. One case we dealt with in our own practice recently involved a severe rear impact, where a rear seatbelt anchor bolt punctured the tank in a rear crash. The bolt was unguarded and the resulting fire caused five deaths and a very severe burn injury. The hole in the tank was not visible until the tank was removed from the vehicle, over two years after the crash.

Another example of a hidden defect is when the seam of the fuel

tank is split or separated in a crash. The photo below shows a rather large seam split that was not visible until the tank was removed from the vehicle.

Often there will be no visible "hole" in the seam. However, when the tank is subjected to crash forces, the hydrostatic pressure created inside the tank will cause gasoline to be expelled through very minor cracks in the seam of the tank. The best way to determine if there is a hidden seam split or other compromise of the fuel tank is to inject smoke into the tank under pressure. The smoke will escape from whatever hole or seam split that may exist.

B. Filler-neck defects

Auto manufacturers have recognized for over 50 years that safety features, such as one way valves, must be incorporated into the filler neck to prevent fuel fed fires. If the filler neck (sometimes referred to as the filler pipe) is dislodged or pulled out in a crash, the fuel will escape from the fuel tank if there is no check-valve.

The U.S. Department of Transportation (DOT) and the National Highway Safety Bureau (the predecessor to the National Highway Traffic Safety Administration) issued a report in 1967 concerning performance standards for fuel-tank protection. The agencies found that it was common for fuel to spill from the fuel-filler pipe in a rollover or other type of crash and concluded that check-valves located in the pipe would eliminate spillage:

> Information received from accident data reports indicate[s] that the rollover type of accident accounts for the highest incidence of fatal

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burn injuries. In a rollover accident, fuel is often spilled from a virtually intact system. Separation of the filler pipe from the body shell or from the tank opens a large exit for the fuel. Also, the vent pipe of the tank can spill during and following an overturning accident. Check-valves located at the filler-pipe and vent-pipe openings of a fuel tank would eliminate spillage during rollover or upset. These check-valves might be gravity operated, spring loaded, or operated be vacuum from the engine. There is at least one source of a check-valve assembly which may be purchased for installation in stock cars used in NASCAR sponsored races.

C. After market modifications

Many RV's, ambulances, vans, etc. are modified by "after-market" manufacturers. These modifiers will purchase a chassis from Ford, GM, Freightliner, etc. and then build the RV or ambulance on the chassis. These modifiers will often re-route the filler-neck to accommodate their particular vehicle.

These modifications can cause vehicle fires when the filler-neck is pulled away from the tank in a crash. Any time a vehicle which has been modified is involved in a post-crash fire, it should be investigated to determine of the modifications contributed to the cause of the fire.

D. Siphoning defect

Most of us know that gasoline thieves can simply stick a hose down the fuel pipe into the tank in order to siphon gas from the tank. The same concept can occur in a vehicle crash, except that the fuel will siphon out of the tank through a hole or compromise in the fuel line.

Most vehicles manufactured after the early 1980s have three fuel lines: supply, return, and vapor lines. Siphoning occurs most often in the return line or supply line. An attorney investigating a siphoning case must determine the location of the break in the fuel line, the fluid level in the tank, and the orientation of the vehicle at the crash scene, if the break is lower than the fluid level in the tank, siphoning will occur because of gravity. If the break is above the fluid level, there must be adequate tank vapor pressure to force gasoline to siphon upward.

Vehicle manufacturers have known for many years that a very inexpensive one-way valve (the cost is a few pennies) can prevent siphoning. In spite of this inexpensive and easy "fix," some cars on the road today will allow siphoning from the tank.

Conclusion

Vehicle fires continue to be a major cause of serious injuries and deaths, and thus are the subject of many personal injury cases every year in the U.S. If a crash was "survivable" (i.e., one or more occupants survived or the cause of death was by fire), the vehicle involved should be investigated for a potential fuel system defect, with preservation of the vehicle being key. Fuel system integrity tends to

be one area where manufacturers' improvements lag significantly behind the amazing technological advances that are found elsewhere in their automobiles.

Endnotes

[1] http://wheels.blogs.nytimes.com/2013/08/29/nissan-announces-plans-to-release-driverless-cars-by-2020/?_php=true&_type=blogs&_r=0 . Also, http://www.mbusa.com/mercedes/benz/safety.

[2] Federal Motor Vehicle Safety Standards §571.301 Standard No. 301

[3] *Baker et al. v. General Motors Corp.*, 522 U.S. 222 (1998).

[4] Ronald E. Elwell, Et. Al., Abstract of Presentation on Fuel System Integrity (May 19, 1972) (on file with author).

[5] Spitz, Werner. *Spitz and Fisher's Medical Investigation of Death: Guidelines for the Application of Pathology to Crime Investigation*, 3rd ed. Charles C. Thomas, 1993.

[6] https://www.nfpa.org/safety-information/for-consumers/vehicles.

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