MEDICALADVISORS, INC
TECHNICAL NETWORK CONSULTING SERVICE®

HOW DO AUTO FIRES START?

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Mechanical Engineer from Maryland

The National Fire Protection Association (NFPA) reports that about one fifth of all fires reported are motor vehicle fires, and that the majority of vehicle fires are not related to crashes. The number of non-crash vehicle fires is approximately one in 1,000 registered vehicles. Although frequent, these fires do not seem to attract much attention or investigation, because they do not usually result in injury or property claims beyond the vehicle replacement cost.

Vehicle fires usually progress slowly in the early stages, allowing occupants time to escape injury. Injury or fatalities sometimes occur in cases where an occupant is asleep, disabled, intoxicated, or too young to escape. When burning vehicles are parked adjacent to or inside buildings, property losses can be catastrophic.

What is the cause and origin of these fires?

Most vehicle fires originate within the engine compartment. Leakage of fuel, motor oil, transmission fluid, power steering fluid, brake fluid, or even coolant can lead to engine fires, and the leakage of a flammable or combustible liquid in an engine compartment results from some kind of failure. The failure may be a result of normal wear and tear, failure of a mechanic to make repairs safely, design failure which leads to rupture or abrasion of hoses or manufacturing defects in hoses, gaskets or fluid connections.

Whenever a brand new vehicle (or one which has had very recent repairs) burns, failure of the manufacturer (or a mechanic) to safely tighten all fluid connections is the most likely cause. A search of National Highway Traffic Safety Administration (NHTSA) files often uncovers a disproportionate number of fires for a particular make, model and year, leading the investigator to a particular defect or component failure.

About 15 percent of motor vehicle fires originate in the passenger compartment. The main causes of these are electrical short circuits and cigarettes. Federal Motor Vehicle Safety Standard 302, "Flammability of Interior Marerials" limits the maximum rate of burning for seat covers, carpeting and other interior materials, but does not address the toxic nature of combustion products from these materials. Occupants (and firefighters) risk exposure to very hazardous fumes in the vicinity of burning vehicles.

Catalytic converters can generate temperatures high enough to ignite surrounding materials. When engine control systems malfunction, catalyst operating temperatures can be elevated to a level where the entire catalyst and downstream exhaust pipe glow red hot. This is a condition which often leads to "unexplained" vehicle fires.