



## EXPLODING CELL PHONE

In 2005, we were requested to analyze a fire that had occurred in a Mercury Sable automobile that had been parked overnight in a residential driveway. Upon arrival, we found that the car had not been severely burned and that the fire had clearly originated in (with burn damage limited to) the passenger compartment. The fire had self-extinguished. Additionally, we were informed that the owner of the car had left a cell phone charging overnight in the car. We learned that the owner was not a smoker.



Figure 1



Figure 2

The burn patterns in the passenger compartment were peculiar. A localized fire had burned near the base of the passenger's side front seat, in a spot where no powered devices or electrical wiring had been present. Otherwise, the cup holders on the console between the front seats (where the cell phone had reportedly been placed) were full of metal fragments (see Figure 1). The cup holder on



Figure 3



Figure 4

the driver's side was more heavily soot covered than that on the passenger's side. The cell phone, missing its back cover and its battery, was found on the carpet beneath the dashboard, with a "shadow" of the back of the phone (minus its back cover) left behind on the carpet (see Figure 2). Thin metal fragments, accompanied by black dust, were found all around the front seat (see Figure 3). In one case, a scorch mark similar in shape to the fragment was found directly under it (see Figure 4). Figure 5 shows the cell phone, its back cover (which was later found near the console) and the cell phone battery charger. The battery was nowhere to be found.

It did not take long to arrive at the conclusion that the cell phone battery had exploded into numerous hot metallic fragments, one of which was sizeable enough to ignite the carpeting on the floor of the

car near the passenger's side front seat.

A Google search revealed that dozens of such cell phone explosions have occurred over the past three to four years, involving more than one cell phone manufacturer. In some cases, cellular phones have exploded in people's hands or pockets. In a number of cases, the explosions have

been blamed on counterfeit replacement batteries that were installed in the phones.

If there is a moral to this story, it is that you should perhaps be wary of using a replacement battery in your cell phone. Information is available on the Internet that will help you to avoid purchasing a dangerous counterfeit battery.



Figure 5