

# COLLINGSWOOD FIRE DEPARTMENT

20 West Collings Avenue  
Collingswood, New Jersey 08108

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**Chief of Department  
John R. Amet**

## SAFETY ALERT

On Wednesday, July 14, 2010 the Collingswood Fire Department responded to several incidents due to flash flooding. We had assisted numerous stranded motorists that had been caught in the flooding. Our tactics were different depending on the situation.

During one of the assists we came across a female stranded in her vehicle in knee high water. We made verbal contact and determined the best way to remove her from the hazard was to manually push her vehicle approximately 20' in reverse to higher ground. We had her place the vehicle in neutral with the ignition off. Three firefighters took placement on the hood of the vehicle and I placed my hand on the driver's side 'B' post to push the car from that point. The vehicle was a 2009 Mitsubishi Galante. Due to the height of the vehicle this placed the left side of my head even with the opened window. We began to push the vehicle and almost immediately the driver's steering wheel air bag had deployed. This created a loud noise and stunned me, which caused me to stumble back off of the vehicle. I immediately had ringing and hearing loss in my left ear. The driver of the vehicle was assessed and found to have no injuries by my crew. I was assessed at the ER and had a follow up with a specialist the following day. It was determined that I only had temporary hearing loss from the "explosion", and it should return in a short period of time.

We, as emergency responders, go through countless hours of training on the new technology of vehicles for fires and extrication and the dangers present from unintentional airbag deployment. To date I have never heard of air bags deploying due to water damage and have not seen any information to the

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emergency services community. After this incident it has caused us to do some research to see why this airbag deployed. There was no impact onto the vehicle at any time.

Through our findings it was found that the Air Bag Control Unit (ABCU), which reads the air bag sensors and triggers the ignition of a gas generator propellant to rapidly inflate the airbags, is commonly located under the driver's seat or floor boards. This places the unit at a very low point in the vehicle which subjects it to water damage. Once subjected to water the ABCU can trigger the pyrotechnic device and cause the air bags to activate. This can happen instantaneously or even days after the flooding. There have been several documented cases as to this happening.

The pyrotechnic device which causes the air bags to activate is commonly an electrical conductor wrapped in a combustible material. The conductor becomes hot and ignites the combustible material and initiates a gas generator. This causes a loud explosion that can reach 165 to 175dB. The air bag can deploy 3,000 to 4,000 lbs per square inch of force. This "explosion" has caused several injuries to occupants and emergency responders. There have been several documented cases of hearing injuries of passengers when the air bag deploys. Injuries include ruptured ear drums, inner ear damage and permanent hearing loss. This is most common in the passenger of the vehicle who is next to the air bag.

I felt compelled to share this incident with the emergency services community to hopefully avoid any further injuries or even worse. I was very fortunate not to be struck with the air bag and not sustain any permanent hearing damage. We were also fortunate that the occupant of the vehicle was not injured. Manufactures recommendations are that, any time a vehicle is involved in a flood or has significant water damage, the vehicle's **battery be disconnected and the vehicle towed.** We are changing our Department Policy

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to avoid this incident from happening in the future. We will be following the manufactures recommendations with disconnecting the battery and having the vehicle towed and also removing the occupants from the vehicle as soon as possible.

If you have any further questions, please do not hesitate to contact me.

Through sharing of information we can learn from each other's incidents and mistakes so that we can avoid any injuries or deaths in the future. Stay Safe!

Respectfully,

Keith Davis  
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