
Mobile phones

Are they a hazard to more than your sanity?

Mobile phones have rapidly become one of the necessities of modern life, allowing people to keep in touch with each other at all times. As we all know, they can also be annoying when they ring at inappropriate times; even CONCAWE meetings now suffer from this problem! This may be fairly trivial, but can they be a fire hazard as well?

Recently, there have been a number of press articles highlighting the dangers of the use of mobile phones at service stations. Also, in a number of countries (for example the UK) there are signs displayed at service stations banning the use of such phones. However, the lists of dos and don'ts at service stations is now so long that they are losing their impact on the public.

Are such bans necessary? There have been reports of serious fires caused by mobile phones used during vehicle refuelling. However, it has proved very difficult to track down any reliable information on these fires; various sources have identified different companies in different countries, mostly in South-east Asia. It is therefore by no means certain that there have even been any such fires and, to our knowledge, none have been reported in Europe. Therefore, in the absence of hard evidence we have to revert to theory.

The refuelling of vehicles with gasoline is a good example of the difference between hazard and risk. Gasoline is a highly flammable liquid and therefore, by definition, its use presents a significant hazard. However, it is used in very large quantities, and millions of vehicles are refuelled with it in Europe every year. Experience shows that the numbers of fires which occur during this operation are very few, and most of these are not serious enough to cause personal injury. The observed risk is therefore very low. What is important is whether the use of mobile phones increases this risk.

Gasoline vapour in air is only flammable over a narrow composition range. In the vehicle tank, the vapour is too rich and it will not burn. As soon as the vapour is forced out of the tank by the incoming fuel it dissipates in the air and soon falls below the lower flammability limit. The fuel vapour can therefore only be ignited over a short distance from the car. Even though there are many ignition sources at a service station they are not usually present in the area of most hazard. Hence, fires are rare.

In theory, a mobile phone (like almost any other piece of electrical equipment) can generate a spark powerful enough to ignite gasoline vapour. In refineries they are classified as 'naked lights' and their use is only allowed (if at all) under permit when it has been established that flammable gas mixtures are not present. The many other possible ignition sources at service stations include smoking, static electricity and, not least, the car engines themselves. The additional risk from mobile phones is therefore likely to be small. There is, however, one exception. Many people carry phones attached to their belts. In this position, if the phone were to ring (which is perhaps the most likely time for a spark) it could well be in the right position to ignite the flammable vapour cloud.

Perhaps a greater risk when using a mobile phone while filling is the distraction from a task that should have one's full attention if spills and other accidents are to be avoided. All in all, perhaps the safest solution is to leave the phone in the car.