# Use of Mobile Phones and Portable Radios in Gasoline Stations
# A Motorola Background Paper
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In recent years, we have witnessed a significant amount of speculation over whether the use of mobile phones or portable radios at gasoline stations could pose a risk of fire or explosion. Media interest in this issue has been fed by Internet reports and email messages that have circulated around the world. Some facts are in order. Motorola and others, including petroleum industry organizations have looked into this matter at length. It can be traced – and has been perpetuated – by reports of incidents that never occurred or could not be verified when investigated. In short, Motorola can report that:

- There has been no documented incident anywhere in the world where the use of a mobile phone or portable radio was found to cause of a fire or explosion in a gasoline station.

- There is no credible reason, based on technical evaluation, to believe that the use of these products poses any such hazard.

In response to rumors that attracted considerable attention in 1999, Motorola commissioned a review by an independent scientific, engineering and technical consulting firm: Exponent Failure Analysis Associates. Exponent concluded in December 1999 that “the use of a cell phone at a gasoline filling station under normal operating conditions presents a negligible hazard” and that the likelihood of such an accident under any conditions “is very remote.”

“Automobiles (which have numerous potential ignition sources) pose a greater ignition hazard,” the report said. “Finally, other potential ignition sources are present, such as static discharge between a person and a vehicle.”
An analysis by the Center for the Study of Wireless Electromagnetic Compatibility Center at the University of Oklahoma reached a similar conclusion in August 2001. It said research into this issue “provided virtually no evidence to suggest that cell phones pose a hazard at gas stations.”

“While it may be theoretically possible for a spark from a cell phone battery to ignite gas vapor under very precise conditions, the historical evidence does not support the need for further research,” the report said. “Until there is evidence to the contrary, we suggest that no further action be initiated in this regard, and that no recommendations for further action are required of the wireless phone or petroleum industries.”

The Exponent and Oklahoma reviews agreed that the issue was whether a battery-related spark could create a source of ignition. The radio signals from the phone were not at issue.

The petroleum industry has devoted additional attention to this subject. In the United States, the Petroleum Equipment Industry and American Petroleum Institute have emphasized that mobile phones are not a focus of their campaign to alert consumers about the demonstrable danger that static discharge poses when fueling a vehicle. Their website on the subject states that there is no known incident of fire or explosion resulting from the use of a mobile phone. Shell Oil, often cited in Internet reports and email messages, has stated that it similarly has no knowledge of any such events. The U.K. Institute of Petroleum hosted a technical seminar on the issue in March 2003 and concluded there was no evidentiary or technical evidence to support the view that mobile phones pose a real risk. Other authoritative government agencies, industry groups and independent organizations have reached similar conclusions.

Why does confusion persist? In part because of public misunderstanding. For example, mobile phones have been identified as suspected causes of accidents later found to have resulted from common discharges of static electricity. The Petroleum Industry Association states that its “Stop Static” campaign “has nothing to do with cellphones whatsoever.” However, the mere presence of mobile phones in such situations contributed to continued speculation about their safe use. In 2002, a small fire on an oil rig in the Gulf of Mexico prompted a U.S. government agency to caution against mobile phone use in such settings. Laboratory tests later confirmed that mobile phone use was not to blame. In an April 2004 article, members of the Committee on Man and Radiation (COMAR) of the Institute of Electrical and Electronics Engineers (IEEE) evaluated the necessary conditions for fuel ignition – fuel-air mix, location of ignition source and energy content – and concluded: “It is extremely unlikely that these conditions will occur simultaneously near a gas station. So we must conclude that, as far as cellphones are concerned, there is nothing to worry about.”

The use of mobile phones in gasoline stations long ago attained the status of “Internet hoax” or “urban legend” – rumor and supposition accorded undue credence because of repeated mentions in the media, over the Internet and by email messages of incidents that defied verification and technical plausibility. In the end, public policies and consumer advice must be based not on speculation but fact. The facts in this case are clear. They are reinforced by extensive engineering analysis and suggest that there is no sound technical basis to prohibit the use of mobile phones in gasoline stations or single them out as hazards.

**References**

“Cell Phone Usage at Gasoline Stations.” Report to Motorola by Exponent Failure Analysis Associates, Menlo Park, California USA. December 1999.
“Investigation of the Potential for Wireless Phones to Cause Explosions at Gas Stations.” Center for the Study of Wireless Electromagnetic Compatibility, University of Oklahoma, Norman, Oklahoma USA. August 2001. www.ou.edu/engineering/emc/

“Stop Static.” Ongoing public awareness campaign by the Petroleum Equipment Institute and American Petroleum Institute. www.pei.org/static/index.htm
“Mobile Phones and Petrol Forecourts: The Conclusion.” Proceedings of the U.K. Institute of Petroleum. March 21, 2003.
www.intellectuk.org/press/news/news_21_03_03.asp and
http://www.intellectuk.org/press/news/news_16_05_03a.asp.
“Use of Mobile Phones at Petrol Stations.” Statement of the Australian Mobile Telecommunications Association. http://www.amta.org.au/?Page=38
“Cellular Telecommunications & Internet Association Statement on the Alleged Dangers of Cell Phone Use at Gas Stations.” May 2004.
http://www.ctia.org/content/index.cfm/AID/1040
“Fuelish Pleasures: Is Using a Cell Phone at a Gas Station Dangerous?” Urban Legends Reference Pages. January 2002.
www.snopes2.com/autos/hazards/gasvapor.htm
“Mobile (Cell) Phones and Gas Stations: A Fact Sheet.” Oregon Office of State Fire Marshal.
http://159.121.82.250/
“FORUM: Cellphones Pose No Gas Station Hazard.” IEEE Spectrum, April 2004.
http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?puNumber=6
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