

Using a Cellular Phone in a Gas Station – Risk Analysis

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Fire versus Cellular



הצתת אדי בנוזן בגינוסר



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What is the Risk?

Theoretically a cell phone might constitute an ignition hazard to inflammable atmospheres due to:

- *RF Radiation*
- *Active electronic circuitry (the PRC is not Ex. Proof)*
- *Sparks generated from battery removal/assembly*
- *Sparks from electrical contacts*
- *Attention lost of the driver*

What is Risk Analysis?

A risk analysis was carried out using the method per EN 1050 - Safety of Machinery – Risk Assessment.

Risk analysis constitutes several steps:

- 1) Identifying the hazard: safety data listed in a master safety data sheets (MSDS) regarding flammability and ease of ignition of the HAZMAT involved

i.e. gasoline: MIE-0.2mJ; Lower and upper explosive limit -1%-8%; Flash point <-40°C

What is Risk Analysis (2)?

- 2) Determination of the probability for emissions of flammable vapors in the air of a gas station.
- 3) The probability for the presence of ignition sources.
- 4) Evaluation of the damage incurred if an ignition occurs.
- 5) The probability for realization of the hazard.
- 6) Measures for minimizing the hazard.

Risk Assessment

- **Radiation Hazards** (per British Standard BS-4992) : The strongest E-field that can be present from any cellular phone is $<50\text{V/m}$. This field is 5% of the safe radiation level
- **Connection and disconnection of mechanical contacts:** not feasible in a smart phone, including battery disconnection
- **Loose contact of electronic circuits:** N/R
- **Passage of stray current:** : N/R
- **Lost of driver's attention:** a proven risk

Conclusions

- The true risk of using cellular phones in a gas station is the possible lost of the driver's attention while refueling.

e.g. forgetting to remove the fuel nuzzle at the end of refueling, or getting back to the car before ending refueling and thereafter going out to remove the nuzzle that might end up in electrostatic discharge from the driver's finger through the gas vapor.

- The question remains – is it justified to prevent the use of a cellular phone in a gas station?