



LAKELAND FIRE DEPARTMENT

Media Release

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Charging an Electric Golf Cart May Pose Unexpected Health Hazards

Although very rare, the Lakeland Fire Department has recently responded to calls involving a home's carbon monoxide (CO) detector being activated by hydrogen released from an electric golf cart's battery while being charged.

In one particular instance, the home was entirely electric with no potential source for carbon emissions from a fossil fuel burning source. Fortunately, the homeowners had a carbon monoxide detector. The CO detector activated and LFD crews were called in to investigate. The crews, using specialized monitors detected readings for carbon monoxide emissions although there was no source for carbon monoxide in the home. Through thorough investigation the source of an emission was traced back to the home's garage where an electric golf cart was being charged.

Electric golf carts use batteries that in good working condition should not produce any emissions, however in the event of a faulty or broken battery there is a potential for hydrogen to be emitted. The emitted hydrogen in turn creates the false positive reading on a carbon monoxide detector.

Excessive amounts of hydrogen can be harmful to humans and in the event of the incident referred to, the home's occupants described similar symptoms to carbon monoxide poisoning such as headache, nausea, and dizziness. After concluding the investigation for an emission source, LFD crews ventilated the home and everyone returned safely inside.

Similar accounts of faulty golf cart batteries creating a false positive reading of carbon monoxide have been reported by other fire departments in the nation, particularly in areas with high concentrations of golf cart enthusiasts who depend on golf carts as part of their recreational lifestyle.

Lakeland has several communities where many homeowners have electric golf carts. LFD does not want to unnecessarily alarm the public but as a precaution would like to strongly encourage every electric golf cart owner to:

- Ensure golf carts are well maintained and batteries are in proper working condition
- Charge electric golf cart batteries in a well ventilated space
- As a precaution, the department recommends all homes with a golf cart have a carbon monoxide detector to potentially detect any emissions

Although carbon monoxide detectors are not designed for the detection of other gases they have proven helpful in incidents like these. They also provide peace of mind and safety in detecting carbon monoxide which is a more likely hazard and has led to accidental poisonings of home occupants.

Beyond the obvious danger of fire, explosion and asphyxiation, little data is available indicating the health effects of long-term exposure to the gases given off during the battery charging process. The quantity required to cause death is very substantial. NFPA 704 identifies the health effects of hydrogen as being a 0. In addition, OSHA's Permissible Exposure Limit (PEL) and Recommended Exposure Level (REL) are not set due to the fact that hydrogen is considered to be relatively safe below the flammable and explosive levels.

Even though hydrogen is viewed as being non-toxic, many occupants in homes responded to by department personnel have complained of headaches, nausea, dyspnea, and vertigo. It is anecdotally believed that this may be caused by hydrogen's displacement of oxygen in a fairly well-sealed home, and that the lower oxygen concentration may result in patients with the above symptoms.

For more information about carbon monoxide detectors visit <http://www.nfpa.org/safety-information/for-consumers/fire-and-safety-equipment/carbon-monoxide>

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