

Battery-Powered Devices Can Be Ignition Sources

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▲ Ensure that battery-powered devices or other electrical equipment are properly rated for a classified area.

Workers sometimes bring lithium-ion or other battery-powered devices such as tablets, smartphones, and cordless tools into classified areas. Batteries are energy sources that cannot be safely de-energized. Employees and contractors may not realize that these tools can be ignition sources. Even some approved battery-powered tools can be damaged if dropped. A device properly rated for a classified area, like a tablet, can be rendered unsuitable by adding non-approved peripheral equipment, like headphones.

While no serious incidents have been reported in chemical operations from the use of battery-powered equipment, it is only a matter of time before an unapproved device will provide the ignition source for a fire or explosion. The use or presence of non-classified electrical equipment in a hazardous area should be considered a near-miss — an incident or an operational interruption could have occurred if circumstances had been slightly different.

Did You Know?

- Battery-powered tools can be brought into a classified area by maintenance technicians, contractors, vendors, or engineering personnel.
- Field operators may use battery-powered tablets for data collection during rounds.
- Newer batteries operate at higher voltages (>12 V) than older ones and can easily create a spark large enough to ignite flammable vapors.
- Many flammable materials have a low minimum ignition energy (MIE). For example, the MIE for methane is 0.28 mJ, gasoline is 0.2–0.3 mJ, methanol is 0.14 mJ, and hydrogen is 0.02 mJ.
- Humans can feel static sparks as low as 1 mJ. That is enough energy to ignite several flammable materials and some combustible dusts.
- Changing or removing a battery can cause a spark when contacts are connected or disconnected.
- Non-classified devices can be safely used in a classified area only if the hot work practices are followed (inspection of the area, testing/monitoring for flammable atmospheres, signed hot work permit, etc.).

What Can You Do?

- Know the electrical or hazardous area classification for the areas where you work. If you do not know, ask your supervisor or an engineer assigned to the area.
- Only use devices and equipment that are approved for the area's classification.
- When you see others using battery-powered equipment, ask if the tools are properly rated. If the tools are not properly rated, ask the worker to discontinue use until the correct safety measures can be taken.
- Report the use of non-approved devices as a near-miss or unsafe act.

Battery-powered devices may present ignition sources that require special attention!