

Battery powered tools & devices can be ignition sources

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Figure 1. Battery-powered equipment

People bring lithium-ion or other battery-powered devices such as tablets, smart phones, 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 there have been no reported serious incidents in chemical operations from 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. 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 or 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) and can easily create a spark large enough to ignite flammable vapors.
- Many flammable materials have a low minimum ignition energy (MIE). The minimum ignition energies for some common flammable materials are:

A static spark you can feel is 1 to 10 mJ. That is enough energy to ignite many flammable materials and some combustible dusts.

Material	MIE (mJ)
Methane	0.28
Gasoline	0.2-0.3
Methanol	0.14
Hydrogen	0.02

- Changing or removing a battery can cause a spark when contacts are connected or disconnected.
- Non-classified devices can be safely used in classified area 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 them to discontinue use until the correct safety measures can be taken.
- Use of non-approved devices should be reported as a near-miss or unsafe act.

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