

Lockouts Are for the Home Too

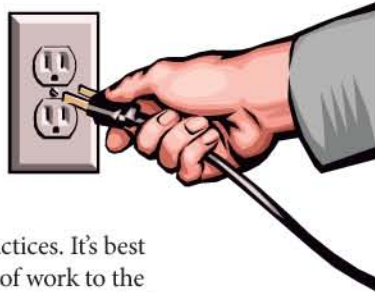
We don't often think of safety devices in our homes as lockouts—but many of them are.

One of the most important lockout devices people use every day is a set of car keys. These keys provide access to over 2,000 pounds of moving machinery—all too often, a deadly force.

That's why you need to use your car keys as they were intended—to lockout the vehicle. Many tragedies have occurred simply because keys and children were left alone together in vehicles—in the name of convenience. It's a lot easier to shut off the car and take the keys (and the kids) out even for short errands than to deal with the aftermath of an incident.

A power plug is also a lockout device. Pulling the plug before you work on equipment seems simple—and it is, these simple actions prevent incidents.

Another area where lockouts are extensively used is for working on electrical wiring. It is a mistake to do wiring on your own if this is not your field. As a professional in your own field, you know the importance of accurate knowledge, following procedures, and safe work practices. It's best to leave this kind of work to the experts—they know how to do the job safely—using lockouts.



Don't Get into a Tight Squeeze

Before starting a job using a lockout, check the appropriate Codes of Practice and safe work permits to make yourself aware of lockout requirements and procedures for the job.

Remember—doing effective lockouts requires initial and refresher training (if you haven't done it in a while).

Make sure you know what you're doing before you do it. If you don't, you may find yourself in a tight squeeze.



For more information, refer to current applicable Occupational Health & Safety Legislation.

The Alberta Construction Safety Association's mission is to provide quality advice and education for the construction industry that will reduce human suffering and financial costs associated with workplace incidents. This brochure is part of a series, **The Toolbox Brochures**, which are available on a variety of safety topics. If you have any questions or comments please contact:



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Hazardous Energy



Making Safety A Way Of Life



The Alberta Construction Safety Association

Controlling the Unexpected

Electrical current/source must be removed when electrical equipment is inspected, serviced or repaired. To ensure the safety of personnel working with the equipment, current/source is removed and the equipment must be locked out and tagged out.

What Can Happen if You Don't?

Strange as it may seem, most fatal electrical shocks happen to people who should know better. Here are some electrical contact medical facts that should make you think twice before taking chances. It is not the voltage but the current that kills.

READINGS	EFFECTS
Safe Current Values	
1 mA or Less	Causes no sensation – not felt
1 mA to 8 mA	Sensation of shock, not painful; individual can let go at will since muscular control is not lost
Unsafe current values	
8 mA to 15 mA	Painful shock; individual can let go at will since muscular control is not lost
15 mA to 20 mA	Painful shock; control of adjacent muscles lost; victim can not let go
50 mA to 100 mA	Ventricular fibrillation – a heart condition that can result in death – is possible
100 mA to 200 mA	Ventricular fibrillation occurs
200 mA and over	Severe burns, severe muscular contractions – so severe that chest muscles clamp the heart and stop it for the duration of the shock (This prevents ventricular fibrillation)

Prevention is the best practice for electrical shock. Respect all voltages and follow safe work procedures. **Do Not Take Chances.**

Hazardous Energy Sources

There are different types of hazardous energy sources:

- **Kinetic energy**—moving equipment, moving materials
- **Electrical**—open bus work, motors, generators
- **Flammable, Chemical, Combustible, Corrosive**—these may be in the form of gases, vapours, liquids, or solids

- **Potential**—suspended loads
- **Thermal**—steam, hot water, gases, liquefied gases (cold)
- **Radiation**—light, laser, radioactive

Types of Lockouts

- **Electrical**—soft wired (equipment that is plugged in) or hard wired (equipment with circuit breakers or disconnect switches).
- **Hydraulic/Pneumatic**—push/pull rod cylinder or drive motors. When using this type of lockout, make sure that any residual or stored system pressure is relieved (bled).
- **Blind/Blank**—this type of lockout guards against the release of a dangerous substance or material during maintenance. This is achieved by closing and securing valves in the closed position using locks. However, this lockout is **NOT** adequate protection for working in confined spaces. Follow appropriate legislation and procedures for confined space work.

How Is This Performed?

A lockout is done by placing a lock and tag at the power source or lockout point. The tag has:

- A warning to other persons not to start or operate the device.
- A unique mark or identifier that specifies the worker to whom the lock is assigned.
- The worker's name and signature.

Tags alone do not ensure your safety. Because tags cannot disable the operation of equipment, you should only use a system which combines locks and tags. This eliminates confusion about who is working where, and ensures that equipment cannot be turned on by accident. If it's important enough for you to put a tag on it, it's important enough to put a lock on it.

Lockout Procedure

Your company should have a lockout procedure to make sure everyone is doing it properly. This procedure should include the following steps:

- Identify the equipment/machine/process to which lockout is to be applied.
- Make sure the equipment/machine/process is de-energized and stopped.
- Identify the main isolating device(s) for the energy source(s) and isolate the equipment.
- Apply a personal lock/tag.
- Try to start the equipment to ensure it will not start. During this test, make sure that all personnel are clear of the equipment. When you are done testing, return the control to the off or neutral position.
- A lockout log book should be provided and used at each lockout station.

The person who should remove a lockout and tag is the worker who installed them. In an emergency, if the worker who installed the lock is unavailable, a worker designated by the employer may remove the lock—after first making sure no one is at risk when the device(s) starts up.

What to Use

If only one worker is working in the controlled area, a simple padlock can control the switch. If several workers are involved, each should have his/her own lock and each lock should be used to secure a gang lockout assembly.

A multiple point lockout involves the lockout and disconnection of a number of disconnect switches. It is particularly important to have written procedures for multiple point lockouts as there is a greater possibility of something going wrong.

Key boxes can sometimes be used for complex sites with formalized, written procedures outlining their use.