

August 24, 2017


## **Advisory Bulletin AB-2017-06** **Personal safety while working around roof mounted photovoltaic equipment**

The Alberta Roofing Contractors Association (ARCA) encourages special consideration be undertaken while working on roofs that have roof mounted photovoltaic (PV) equipment. The fundamental concept of PV systems involves equipment that converts radiant energy from ambient light into direct current (DC) electricity. **This energy cannot be turned off.**

If a roofing contractor intends to visit roofs to conduct leak investigation and remediation and there is PV equipment present ARCA recommends:

1. You must know the voltage of the system prior to going on the roof.
2. A PV installer must attend the site prior to any work being completed to ensure all ground faults are operational and the PV inverters are disconnected and locked out.
3. An individual trained and qualified in the operation of the PV equipment must advise you of all potential hazards and provide continuous escort while working within 1m of any PV equipment (CSA Z462-15).
4. Take all precautions to not touch any part of the PV panels.
5. Wear electrical PPE as indicated in CSA Z462-15 "Workplace Electrical Safety" including: Protective clothing (Long sleeve shirt or coverall), Class E Hard Hats (CAN/CSA-Z94.1), Protective footwear (ASTM F1117) and leather gloves or rubber insulating gloves (ASTM D120 / ASTM F696).
6. Workers must use insulated tools, ladders and/or handling equipment.
7. Metal roofs pose unique challenges.
8. Be aware that roofs may contain conductive products such as metal plates or graphite that increases the potential of electric injury.

The effects of electric shock can be defined in four stages. All can result in significant injury.

	<b>2 mA</b>	Mild shock may cause a startle reflex resulting in a fall from heights
	<b>40 mA</b>	Moderate shock will result in a "Lock-On" response from your body and may also result in a fall or mild burns
	<b>70 mA</b>	Electrical burns
	<b>240 mA</b>	Severe shock causing ventricular fibrillation

**REMEMBER, Water on a roof can dramatically increase the risk and severity of an injury.**

Example:

An electrical schematic of a normal adult (500 Ohms) contacting 50 VDC hand to foot.

**Resulting Shock  
100 mA**

