

# WORKING SAFELY WITH PV SYSTEMS

**Photovoltaic (PV) power systems, also known as solar panels, have become popular in residential and some commercial buildings. The obvious advantages are efficiency and convenience. But if they are to be a safe alternative to traditional sources of electricity, proper hazard assessments and safe work practices are needed.**

The installation and maintenance of PV systems is dangerous work, and the hazards need to be recognized and controlled or even eliminated. Due to the rapid growth of the PV industry, more workers are being exposed to those hazards all the time.

Under Ontario's *Occupational Health and Safety Act* (OHS), employers must be sure their workers and supervisors are aware of the hazards in handling, using, and transporting PV systems. That duty applies whether workers are installing a PV system on the ground or on a rooftop, at an industrial site or at a residential site.

## **Safety hazards**

With a new technology like PV systems, there can be a false assumption that the work involved in their installation is new as well—that old safety rules don't apply. But in fact some of the dangers of working with PV systems are among the most deadly known to the construction industry including:

- Electrical contact
- Falls from heights
- Slips, trips, and falls
- Severe weather
- Musculoskeletal disorders (MSDs).

One reason why PV systems are dangerous to work with or near is that they are installed primarily on rooftops or on the sides of buildings. Not every installer will be trained in working at heights, so falls are a major concern. And although solar panels may look harmless, they generate electricity all the time except in complete darkness. So anyone working close to a solar panel must take precautions to avoid electrical contact.

There's a misconception that PV systems can be installed or maintained by a single worker. That may be possible, but it's a dangerous practice because in the event of an incident, most emergency response plans would be of no use.

Another thing to consider is that installers and maintenance workers won't be the only ones working around PV systems. In fact, almost anyone working on the roof or side of a building might be near one of those systems. This means that companies need to have policies and procedures for reducing their exposure. They also need to make sure their workers receive any additional training that is necessary.

## **Safe work practices**

Through proper training, education, and a job safety analysis (JSA), employers can address the hazards before work on a PV system begins. That saves time and effort, and equips workers with the knowledge they need to work safely with PV systems.

The job tasks below can result in injuries for workers who work on or near PV systems. They should be taken into consideration when creating a JSA:

- Using power tools
- Working with ladders
- Working in extreme weather
- Climbing or working near roof edges and skylights
- Working alone
- Hoisting and rigging
- Manual handling of heavy material (risk of MSDs)
- Proximity of electrical utilities with chance of electrical contact.



## How IHSA can help

There's a lot to consider in the PV industry, and employers have the duty to take every reasonable precaution to protect their workers (OHSA, s. 25(2) (h)). As part of that duty, it's important for employers to establish safe procedures for working with PV systems.

With training and education now readily available through organizations like IHSA, companies working with or near PV systems can update their health and safety policies and safe work procedures for work involving PV systems.

A few years ago, IHSA's Roofers Trade Labour-Management Health and Safety Committee, in association with the Ontario Ministry of Labour (MOL), formed a Photovoltaic Subcommittee to address the health and safety of workers who work on or around PV generating systems.

Realizing that workers and employers need to be educated about the hazards of PV installations, the committee developed a health and safety manual called *Safe Practices for Working On or Around Photovoltaic Systems* (M072).

In addition to this manual, the MOL has developed a hazard alert about Photovoltaic Systems, which is available on their website: [labour.gov.on.ca/english/hs/pubs/alerts/a28.php](http://labour.gov.on.ca/english/hs/pubs/alerts/a28.php)

There is no doubt that the use of solar energy has numerous benefits. It provides a sustainable source of energy and reduces our carbon footprint. As the demand for PV systems continues to grow, the market will become more competitive. So in order to establish a path to true success, companies must develop a culture of safety for working on and around PV systems. By doing that and using the resources available to them, they can keep this growing industry and its workers free from incidents and injuries.



*Safe Practices for Working On or Around Photovoltaic Systems* (M072) is available for purchase or download from the IHSA website.

## Training Topics

For anyone working on or near PV systems, training could include the following topics:

- Fundamentals of electrical hazards and controls
- Fall protection procedures and equipment
- Safe use, handling, hoisting, and transportation of materials
- Safe use of ladders and other access equipment
- Hazards and controls while working on a sloped roof, at the edge of a roof, and around skylights and roof openings
- Exposure to extreme weather
- Musculoskeletal disorders (MSDs) caused by poor lifting techniques and static postures
- Pre-installation checks
- Emergency planning and first aid.