

CONSTRUCTION

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TARGET → ON SAFETY

Overview: Solar Panel Installation Hazards

Introduction

Solar panel installation is a risky job, particularly due to the combination of electrical hazards and working at dangerous heights. Because worker safety is our top priority, we are providing this overview to teach you about the dangers you face while installing solar panels and how you can keep yourself safe from each hazard.

Fire and Explosion

Contrary to popular belief, the risk of fire and explosion from solar panels does not stem from the possibility of overheating or spontaneous combustion. Rather, it is the result of faulty wiring and careless installation near flammable gases or vapors. To prevent fires and explosions while installing solar panels, use the correct wire size and ground all

electrical systems and tools properly. Check for hazardous gases or vapors in the area before beginning the installation process to protect from the risk of explosion.

Electrocution

Electrocution is a major concern when installing solar panels. Solar modules generate up to 600 volts of DC electricity when exposed to sunlight, and when several modules are connected in series, the hazard increases exponentially. Always use the DC disconnect switch when working on a string of PV panels.

Some inexperienced technicians do not realize that unlike a normal power system, turning off the main breaker will shut down the building's utility power, but it will not stop solar systems from producing power. Therefore, you

should keep the module(s) packed in a box until the last minute, and during installation, cover the face with opaque material to halt electrical production. Also, do not touch the terminals while the modules are exposed to light, and as with any electrical work, only use insulated tools.

In addition to the possibility of electrocution while working with the actual PV module, several PV technicians have also been seriously injured by accidentally coming into contact with nearby high-voltage power lines during the installation process. To prevent electrocution from nearby high-voltage power lines, make sure you assess the worksite before beginning a job and insist on adequate on-site supervision to warn workers when they are within 10 feet of a power line.

Chemical Leaching

The manufacturing process for solar panels involves heavy, toxic metals. It is important to note that broken modules may leach dangerous chemicals, though officials still debate the validity of this hazard. Experts agree that it is not possible for chemicals used in manufacturing to leach onto rooftops or into buildings from a properly functioning module.

However, there is debate surrounding whether chemicals from a broken panel could leach and cause harm, whether broken during installation or after disposal.

The best defense against this potential hazard is to prevent breakage altogether by leaving the panel packed until use, taking care not to drop items or accidentally step on the module, and continually making sure the panels are supported and secured at all times. To avoid causing a break in modules post-installation, plan ahead by trimming trees and other objects that rise above the panels. Remember, do not use a module if there is any evidence of broken glass.

Trips, Slips and Falls

As with any job performed at heights, solar panel installation carries the risk of dangerous slips, trips and falls. Stay sure-footed by wearing the proper personal protective equipment (PPE), including non-slip shoes, and by

Risky Business

Due to the combination of electrical hazards and working at dangerous heights, solar panel installation is a dangerous job. Be mindful of the hazards listed here and do your part to maintain a safe working environment.

only working in dry conditions with the proper tools. Always look in the direction you are walking, and cover skylights and other roof openings in the area.

Burn Hazards

When performing solar plumbing jobs, burns are one of the largest risks. Applying fluid to a hot solar system may result in the liquid flashing to steam and causing serious burns to the face or arms. In addition, the system's collector manifolds may become extremely hot. While most of the collector can be handled safely with bare hands, you should always wear gloves in case you come in contact with the collector manifolds. Also, it takes a good deal of time for solar collectors to cool down after sitting in direct sun, so be mindful of this fact when performing maintenance even if the work is done after dark.

Summary

The installation of solar panels is still a relatively new business, so establishing healthy work patterns

is extremely important. Working with power sources is a historically dangerous industry, but solar power does not have to be. Learn about the causes of the many hazards we have discussed, and actively work to correct and avoid these hazards in order to maintain a safe working environment for everyone.