What is an Assured Grounding Program?

Safety Talk

What’s at Stake?

An 18-year-old worker at a construction site was electrocuted when he touched a light fixture while descending from a scaffold for his afternoon break. The source of the electricity was apparently a short in a receptacle, but examination revealed that the electrical equipment used by the contractor was in such poor condition that it was impossible to make a certain determination of the source of the short. Extension cords had poor splices, no grounds, and reversed polarity. One hand drill was not grounded, and the other had no safety plate. Out of several possible scenarios, the most likely was contact between the exposed wires of an extension cord and a screw that protruded from the receptacle, which had its face plate removed. The light fixture, which served as a ground, was known to be faulty for at least 5 months before the incident.

What’s the Danger?

Continued use of damaged electrical equipment (power tools, extension cords, etc) poses an extremely hazardous risk for workers:

- Power tools that have three prongs (hot, neutral and ground) may have the grounding pin missing. This is an extremely hazardous situation because if a short develops in the tool, the user may become the ground in the system and electricity will travel through him or her.
- Sometimes during use, the third prong, or the grounding pin, may become loose or fall out. No one should be allowed to bypass the grounding pin by bending it out of the way or removing it completely.

- Flat-wire cords are prohibited from use on construction sites because they do not provide the protection that double-insulated cords do.
- Double-insulated tools should be used. This generally means the tool is encased in plastic, which will prevent the user from electrocution if the tool develops a short circuit. If there are any defects, such as insulation missing from a cord or a piece of the protective shell broken from the tool, workers are put at risk for electrocution.

How to Protect Yourself

The above story is just one of many incidents workers have faced when working with electricity, many of which can be prevented. One such prevention is the use of an assured grounding program. The assured grounding program consists of a written program, daily visual inspections and a method to detect a faulty grounding wire in an extension cord or hand tool. The objective is to prevent electrocution by ensuring the grounding wire is electrically continuous from the power tool to the power source. An Assured Grounding Program contains four parts:

1. **Worker training:** All workers using extension cords and power tools under an Assured Grounding Program must be trained on the program.
2. **Daily visual inspection:** Extension cords and power tools must be checked daily for damage by the persons who will be using them. Any damage found must be repaired before the cord or tool is used. Damaged extension cords and power cords of tools must not be spliced. The cords can either be replaced or shortened to remove the damaged portion.
3. **Continuity and polarity testing:** A qualified worker must test every extension cord and power tool for circuit continuity, terminal connection test, and correct polarity. Tests are mandatory before tools are used for the first time, following repairs, and at designated times of the year. A qualified worker is a person who has been authorized by a supervisor and who has received appropriate training.
4. **Color-coding extension cords and power tools:** Extension

cords and power tools that have been tested must be tagged with a colored band about 4 inches (10 centimeters) from the male plug. Colored electrical tape is suitable for this purpose. A different color is required at the beginning of each quarter in Canada and at the beginning of each quarter and month in the US (see boxes below). These colors are standard for all worksites.

US codes	Quarter 1: White	Quarter 2: Green	Quarter 3: Red	Quarter 4: Orange
Monthly: N/A (same color as quarter color)	**January** White only	**April** Green only	**July** Red only	**October** Orange only
Monthly: Yellow	**February** White + Yellow	**May** Green + Yellow	**August** Red + Yellow	**November** Orange + Yellow
Monthly: Blue	**March** White + Blue	**June** Green + Blue	**September** Red + Blue	**December** Orange + Blue
Brown tape will be used to indicate ANY/ ALL cases of damaged equipment, and should be locked out and removed from the worksite.				

Canadian Codes	Quarter 1: Red	Quarter 2: White	Quarter 3: Blue	Quarter 4: Green
	January February March	April May June	July August September	October November December

Final Word

Use of assured grounding programs will keep workers safe from electricity hazards by using systematic testing of tools to ensure equipment poses no risks.