

## **Bonding of Non-electrical Equipment**

**Rules 10-400 (page 40), 10-406(4) (page 41)  
10-604 (page 44) and 10-814 (page 48)**

## **Bonding Interior Metal Gas Piping**

Rule 10-406 (4) Requires that interior gas pipes which may become energized, shall be made continuous and be bonded to ground

Questions have arisen regarding what needs to be bonded, what are acceptable bonding methods, who is responsible for installing the bond and does this bond conflict with any Gas Codes?

### Background

Bonding of interior metal gas piping is required from Ontario Gas Bulletin 4/92 to minimize hazards associated with:

- (a) accidental contacts between metal gas piping and energized electrical circuits.
- (b) accumulation of static charges, and
- (c) stray currents and potential differences between various sections of piping.

Bonding is required for new buildings with metal gas piping installed at the time of construction. Short sections of metal gas piping that are newly installed for fireplaces, pool heaters and the like on existing buildings also require bonding. This bonding requirement applies to both natural and propane gas installations.

There generally is or will be in future, electrical wiring associated with the gas installation, in the area of these gas pipes. Gas fireplaces have fans installed right in the unit. This creates the possibility that the gas pipe and even the fireplace and metal chimney may become energized.

### Responsibility

New buildings with gas piping installed at that time. The contractor responsible for making application for inspection of the electrical service is responsible for the bonding.

Electrical service upgrades in buildings with gas piping. The contractor responsible for making application for inspection of the service upgrade is responsible for the bonding.

Gas piping being installed for the first time in a building with no change in the main electrical service but with electrical work associated with appliances supplied by the gas piping. The contractor responsible for making application for inspection of the electrical work is responsible for the bonding.

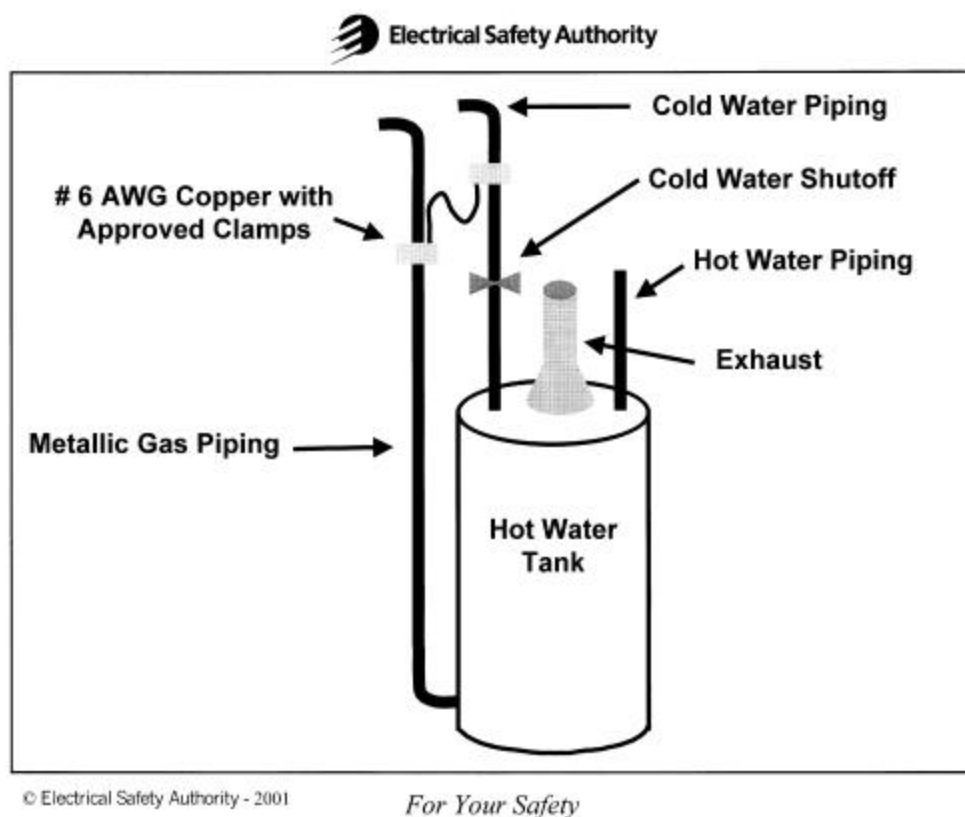
Gas appliance replacement, upgrades or additions. The contractor responsible for making application for inspection of the electrical work associated with the appliances supplied by the gas piping is responsible for the bonding.

### Direction

In the interest of consistency, and to minimize confusion between trades, we ask for strict compliance with the code and require all interior gas piping to be bonded, including these short sections.

The requirements of this rule can be satisfied by installing a #6 copper bond wire, with approved clamps, from the metal gas pipe after the gas meter to the nearest cold water pipe or directly to the main service ground. (Commonly installed at the hot water tank, **see diagram**). The Electrical Inspector must be satisfied that the water piping system is electrically continuous to the system grounding conductor.

The Ontario Gas Utilization Code, 5.14.6 of the B149.1 - M95 does not permit the gas piping to be used as an electrical conductor to ground. In other words, it cannot be used as a ground electrode. Metallic cold water piping, ground rods or a ground plate must be installed as per Rules 10-700 and 10-702 for the grounding electrodes.



### **Bonding of Drain to Ground - Subrule 10-406(3)**

The section of the metal wastewater piping that shall be bonded is the section that is in contact with the earth. For the purposes of the rule, that will be considered a continuous system. Once there is an insulating section, or an insulating type coupling, the portion beyond need not be bonded to the electrical ground and will not be considered part of the continuous drain system.

The routing and use of the drain is more important than the length. The major concern in the rule is voltage differences. A length of drain, which is continuous from where it contacts a remote ground, is of more concern than a length, which is isolated at some point and then continues for some distance. The latter has no ground reference and can transfer no potential; the former can.