By Tim Birnie

Common Electrical Hazards in Older Homes

There's a certain charm in owning an older home. New developments just can't emulate the distinct architecture, craftsmanship and unique history that are synonymous with living in one.

While these character homes have a unique tale to tell, homeowners are realizing that curb appeal alone won't protect their wires from today's electrical demands.

The data gathered from Birnie Electric's award winning Electrical Hazard Detection (EHD), inspections, confirms that 99% of older homes inspected harbour electrical defects; 40% of these residences contain dangerous shock hazards.

According to the Electrical Safety Foundation International, (ESFI), electrical fires account for 51,000 fires each year in North America. When the electrical hasn't been upgraded in 50 years, the odds of a fire risk are greatly increased. Most homeowners are unaware of the dangers lurking behind their walls.

That's why I'm an advocate for electrical safety education. Here are the top six electrical hazards encountered when renovating the electrical in older homes:

Overloaded Circuits: An overloaded circuit draws in more current than the circuit can handle. This occurs when there are too many devices plugged in at once. On a 15amp circuit, the Electrical Safety Authority (ESA), says residents should only draw 12 amps or 80% of the circuit's rating. Overloaded circuits are particularly common in older homes because they lack the electrical infrastructure, and adequate outlets to safely power appliances.

Aged Wiring: Over time the wires behind our walls degrade. It's this inevitable wear-and-tear and the excessive heat caused by potentially overloaded circuits that compromise the insulation surrounding the electrical wires, which is particularly common with two-wire knob and tube systems. This is dangerous because, without insulation, you are exposing live wires.

Missing or non-functioning GFCIs: GFCI technology was introduced in the 1970s. This system, which prevents ground faults and shock hazard, is now installed in areas where water may come into contact with electrical devices. The Canadian Electrical Code 26-700 (11) states that receptacles within 1.5m of sinks, bathtubs or shower stalls must be replaced with GFCI receptacles. Today, GFCIs come in breaker and receptacle form. Many older homes have non-existent or non-functioning GFCIs, because this system didn't exist when the home was built, or the homeowner failed to replace the receptacle every 10 years.

Aluminum Wiring: Contrary to popular belief, homes with aluminum need to be maintained and not rewired. This is performed by bridging a new copper pigtail between existing aluminum wire and the electrical device; receptacles and switches should also be replaced with ones that are suited for aluminum wiring. According to the EFSI, homes wired with aluminum are 55 times more likely to pose a fire risk than homes wired with copper if not properly maintained.

Innovative technology, like speciality infrared scanners, is used to inspect the electrical panel in older homes.

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Extension Cords: In spite of their rating, extension cords should never be used as a long-term solution for redistributing power to another area of the home. Some extension cords are built with multiple outlet ports, which may prompt homeowners to take advantage of the added space. We don't realize that, while the manufacturer has increased the number of outlets, we are not increasing the amperage of the circuit. We've visited homes that had more extension cords than circuits because the homeowner needed to power their electronics in different areas of their house.

Smoke alarms: About 61% of the homes inspected have inadequate, expired or non-existent smoke alarms. According to the Ontario Association of Fire Chiefs (OAFC), smoke alarms must be installed in every sleeping room, between sleeping rooms, in hallways that serve as sleeping rooms and on every story of the house. Hard-wired smoke detectors must be replaced after 10 years of installation. It's also recommended that older homes upgrade to battery-operated smoke alarms, because those connected directly to the electrical power supply won't operate during power outages.

Older homes have a certain presence that's made them a hot commodity for millennial couples and homeowners who don't want to part with their beloved home. It's important to understand that while some of us are drawn to the old-school aesthetic of a character home, its electrical will warrant a twenty-first century facelift.

Tim Birnie, P. Eng. Is the President of Birnie Electric, a family owned and operated company, founded in 1967, that provides design/build, electrical contracting and datacomm services. In 2010 Tim Founded, Birnie CurrentSAFE, an Electrical Hazards Detection program, the first of its kind, that detects and prevent electrical hazards hidden behind the walls. Tim can be reached at tbirnie@birnie.com.