STAY SAFE!



ELECTRICAL FIRES ARE ALL TOO FREQUENT!



- Homes over 40 years of age are at increased risk of fire.
- The fire hazards are usually not recognized by homeowner.
- Identification of electrical fire hazards requires a comprehensive examination by qualified personnel.

FOUR AREAS OF THE HOUSE TO EXAMINE

- 1. Service
- 2. Panelboard(s)
- 3. Branch circuits
- 4. Connected loads



SERVICE PROBLEMS

The service brings the power into the house

Common problems are due to aging:

- Tree branches in contact with service conductors
- Service conductors abrading against newly installed metal gutters
- Deterioration of service conductors at side of house
- Service-conductor wire holder being detached from side of house
- The service grounding is often found to be broken

IN THIS WELL KEPT OLDER HOME

SERVICE HAD SERIOUS FIRE HAZARD PRESENT, NOT RECOGNIZED BY THE HOMEOWNER



IMMEDIATE ATTENTION WAS REQUESTED & HOUSE WAS MADE SAFE



IN ANOTHER HOUSE: GROUND HAS BEEN BROKEN DUE TO A DETACHED CLAMP



IN THIS HOUSE: GROUND WAS BROKEN DUE TO PLUMBING REPAIRS



IN THIS HOUSE: FUSES IN MAIN DISCONNECT WERE REPLACED WITH METAL BARS, PUTTING HOUSE AT RISK OF FIRE



Two illegal suites were added to the home. The main fuses would regularly blow as the service size was not sufficient.

Handyman solved the problem by replacing main fuses with metal bars, creating a fire hazard in the process.

House was rated Extreme Risk.

PANELBOARD PROBLEMS

- The panelboard is the protection system
- Problems with panelboards are abundant in older houses. Commonly found:
 - Oversized circuit breakers
 - Panelboard overloading (too many circuits)
 - Add-on circuits hazardously installed
 - Loose connections
 - Panel openings resulting in build up of flammable debris in panel

IN THIS HOUSE, PANELBOARD WAS ILLEGALLY UPGRADED TO 200 AMPS, PUTTING HOUSE AT RISK OF FIRE



Believe it or not: In about 10% of houses we see, illegal service upgrades are present!

OVERSIZED BREAKERS: COMMON IN OLD HOUSES PUTTING HOUSE AT RISK OF FIRE



15 amp circuit breaker

30 amp circuit breaker

If a circuit blows due to overloading, often homeowners will replace the breaker with a larger circuit breaker. This is a dangerous action as it defeats the function of the circuit breaker. Common with kitchen counter outlets. The correct repair is to provide an additional outlet circuit.

OBSOLETE BREAKERS ARE OFTEN FOUND PUTTING HOUSE AT RISK OF FIRE



Older circuit breakers (pre mid-1960s), such as, "Square D, Type XO" may not trip quickly when needed. Modern breakers, such as "Square D, Type QO" feature internal components to trip quickly.

If these older circuit breakers are identified in homes, they should absolutely be replaced.

BRANCH CIRCUIT PROBLEMS

- Old houses typically did not have enough circuits to meet modern needs. Thus in old houses renovations, upgrades & additional circuits are sure to be present.
- If the renovations, upgrades and additional circuits have all been done by licensed contractors there should be no concerns. However the vast majority of older houses have some degree of illegal add-ons hazardously installed (aka. "Handyman add-ons").
- These illegal add-ons can and do result in fires.

CONNECTIONS NOT IN BOXES



In this home, a handyman added an outlet in the basement. Connections were twisted together and pinched behind the wooden moulding.

If the connections become loose they will spark & create fire.

Hazardous connections such as this are most common in old houses.

IN OLDER HOUSES FIRE HAZARDS ARE ABUNDANT



Open holes in boxes are common with handyman work

These holes provide easy access for spiders and rodents seeking the warmth in an electrical box. Should sparks occur at the connections in the box, the debris can easily ignite. Sometimes boxes are full of debris.

Holes can easily be sealed with metal caps.

LAMP HOLDER HAZARDOUSLY INSTALLED



IN OLD HOUSES HANDYMAN ADD-ON CIRCUITS ARE ABUNDANT



An electrical box is required behind all outlets and switches, to prevent sparks from loose connections from starting a fire.

This installer failed to install an electrical box behind this dryer outlet.

To install a box is a 15 minute fix.

CABLES INSTALLED WITHOUT PROTECTION



Where a metal cable meets the box a protective bushing (aka. Anti-short) is required to protect the sharp edge of the metal casing from cutting the wire.

Installer failed to install an "Anti-short" on this cable to a new furnace, putting house at increased risk of fire"

Anti-shorts take seconds to install.

HAZARDOUS BASEBOARD HEATER INSTALLATION



INDOOR CABLES INSTALLED OUTDOORS DETERIORATE OVER TIME



Old indoor cables installed outdoors have deteriorated, now taped with duct tape by occupant. House is now at increased risk of fire.

These cables will need to be removed and replaced with new.

COMMONLY FOUND IN BASEMENTS: ELECTRICAL WIRES DANGLING AND LIVE!



Live electrical wires found millimeters from gas pipe, could cause sparks

Often found in the basement near gas pipe, due to old electric water heater now replaced with gas. House at risk of fire.

Disconnecting the live cable from the panelboard takes only minutes

KNOB AND TUBE HAS CONCERNS



Key concern: Knob-&-tube is not compatible with standard modern outlets.

KNOB AND TUBE HAS SOLUTIONS



It can be made compatible by replacing the outlet with a GFCI, or providing GFCI protection at the panel.

This is an excellent and safe solution; and relatively inexpensive.

ALUMINUM WIRE ALSO HAS CONCERNS



Key concern: Aluminum wire is not compatible with standard modern outlets

ALUMINUM WIRING HAS SOLUTIONS



Copper pigtailing is an excellent solution, *if* done correctly. It entails short pieces of copper wire from the aluminum wire to the outlet. Correct wire connectors are essential.

In this example, the incorrect wire connectors were used, creating a Fire Hazard Condition

SOME TIDY-UPS DONE BY HOMEOWNERS CREATE SERIOUS FIRE HAZARDS



SOME ACTIONS BY OCCUPANTS PUT HOUSE IN FIRE HAZARD CONDITION



A POWERCHECK EXAMINATION IS COMPREHENSIVE, IMPARTIAL AND NON-INVASIVE. IT TAKES APPROXIMATELY 90 MINUTES IN A TYPICAL OLDER HOME.



STAY SAFE

For further information or to arrange an appointment CONTACT PowerCheck at 1-800-517-3630, or info@powercheck.ca



www.powercheck.ca