



# The Professional Inspector

Information Publication for Homeowners, Realtors, Mortgage Brokers, Insurance Brokers, Professional Builders & Inspectors

## Maintaining Your Hot Water Heater

I have read a number of water heater installations manuals, inspected thousands and have installed many. Manufactures all give the same typical advice on hot water tank maintenance, but most homeowners don't do any type of maintenance on their hot water tanks. I'm going to go over the routine maintenance that hot water tank manufacturers recommend and additional advice. To start off, before any maintenance is to be undertaken, safety is first, and that is, to take the following actions.

- If you have an electric hot water tank, shut off the branch service breaker at the main panel. If you have a gas fueled hot water tank, turn the temperature control knob to the vacation mode.
- Shut off the tanks water supply valve.
- Release the water pressure in the tank by opening hot and cold water service lines from any faucet taps within the home.

Now you're ready to maintain your hot water tank.

Every three months you should drain some water out of the bottom of your tank. There's a drain valve at the bottom of the water tank that can be opened to allow water to drain out. You don't need to literally drain all the water out of the water tank, just open the valve and let some water come out. Once the water looks clear with no debris, you can then close the valve off.

Every spring and fall, you want to really flush out the bottom of the hot water tank, you could attach a garden hose, open the water shut off and empty about 50% of the tank by allowing the

### Inside This Issue

#### Special Interest Articles

Maintaining Your Hot Water Tank.....	1
The Most Dangerous Thing To Do.....	3
Understanding Firestops.....	4
Fireplace Fuel.....	5
Industry News.....	8



water flow through. This water is constantly being replaced by the cold water coming into the water heater, so you don't even need to have a floor drain close by if you have a long enough garden hose. If the drain valve leaks when you're done it should be replaced. They are cheap, and easy to replace. The reason for flushing the water tank is to help prevent the accumulation of sediment and the build up of mineral deposits such as Calcium at the bottom of the tank. As sediment and minerals collect at the bottom of the hot water tank over the years, it will begin to surround and insulate the thermostat, electric heating elements and other related inside components which can lead to the hot water tank running for longer and longer periods of time, which will decrease the life of the water heater and lead to various water temperatures and ultimately fail.



Located near the top along the side of the tank is a valve, which is called the "pressure relief valve". If for any reason the tank builds up pressure, this drain pipe is intended to safely vent excess pressure in the event water heater becomes over pressurized or overheated, this is a safety concern. It is important to have this drain line extended to within 6 inches of the interior or exterior grade in order to protect persons from the sudden escape of hot water , which may occur if this valve is ever called into play.

This valve should not be tested as it will likely leak and replacement of the valve will cost \$15 to \$20. dollars.

Every year, the sacrificial anode rod should be checked for deterioration and replaced if necessary. The purpose of the anode rod is to save the rest of the water heater from destruction by sacrificing itself.

*Cathodic protection is a scheme in which a piece of reactive metal, typically magnesium, is connected to the steel to form an electrochemical cell. Magnesium ions ( $Mg^{2+}$ ) form more easily than iron ions and enough electrons are given up by the magnesium atoms as they become positive ions to completely dominate the hydroxide ion formation process. With nowhere for their electrons to go, the iron atoms can't become iron ions and rusting can't proceed. As long as the magnesium metal, often called the "sacrificial anode", remains intact and connected to the steel, the steel won't rust significantly.*



To check the anode rod, you'll need to start by turning off the water supply to the hot war tank, drain a few inches of water out of the tank and relieve the water pressure to the whole house. Now you just need to locate the thing on the top of the water heater that looks like a hex head plug (see photo) that's the top of the anode rod. Get a 1 1/16" socket wrench, unscrew the anode rod, and pull it out of the water heater to inspect it. Once there is more than six inches of core showing at the anode rod, it's time to replace it. For step by step instructions, check out a video at [changing a water heater anode rod](#).

### **Other Items To Be Aware Of**

If you own a gas fueled hot water heater, be sure that the flue vent is in good condition and that no combustible materials such as plastic, paper are stored at the top of the hot water tank. Any items made from those materials will melt and possibly catch on fire as the gases from the top of the tank

are very hot before continuing up the vent. Additionally, drywall board, wood paneling, fibre ceiling tiles, wood framing, insulation or any other combustible materials should have an air space of several inches from the surface of the vent pipe.

A metal or plastic pan should be installed underside of the hot water tank so that the underside of the tank is not directly in contact with the surface of the concrete floor. This will prevent the bottom of the tank from developing corrosion to the metal underside of the tank. In areas where earthquakes are known in British Columbia, the hot water tank should be strapped and securely fastened to the wall so that the tank cannot move and the risk of the gas supply line and water supply pipes from breaking are minimized. Several feet of space should be allowed around the tank for easy access and maintenance. All too often I see the homeowner's personal belongings and all sorts of material stored around and on the top of tank, which are a safety hazard and an accident waiting to happen

In conclusion, good housekeeping practices, maintenance and upkeep of your hot water tank will provide the necessary hot water needed for many a long years if attention is given several time a year.

### **The Most Dangerous Thing To Do To Your House**

Unvented gas space heaters and fireplaces produce combustion exhaust that doesn't belong inside the home.

You'd never run your car in an enclosed space, would you? So why would you run a gas heater or fireplace in one? I'm not talking about portable space heaters, which everybody knows are dangerous in enclosed areas. I'm talking about actually installing an unvented gas heater or fireplace permanently. Sure, they're inexpensive, but the potential price tag is very high. There's really no such thing as an unvented gas space heater or fireplace. The combustion by-products, quite simply, are vented into the room, then into your lungs and shuttled to your brain. This is bad. When installed, maintained, and operated according to the fine print on their warning labels, gas space heaters and fireplaces have a pretty good safety record. But the potential for mistakes is too great.



A window should be open when these heaters or fireplaces are on, but if it's cold out, many people won't open a window. Unvented gas heaters and fireplaces can't be the primary heat source, but if their thermostat is set at the wrong level, they become the primary heat source. What's more, the room size necessary for a 30,000-Btu unit is unfathomably large. Why in the world would you want to increase your risk of carbon monoxide poisoning?

Let's visit the cave analogy: We've got a fire in the cave and a hole in the ceiling for ventilation. Using an unvented gas appliance is like plugging the hole in the ceiling. By this time, we should have figured out that it makes sense to locate the fire outside the cave.

One more thing: Unvented gas space heaters and fireplaces are illegal in some places across Canada and the United States. Sealed-combustion appliances, good. Unvented combustion appliances, bad. Period.

## **Understanding Fire Stops**

A firestop is a passive fire-protection method designed to diminish the opportunity for fire to spread through unprotected openings in a rated firewall. Such openings are found around the perimeter of pipes and wiring that penetrate firewalls.

### **Places Where Fire Stops Are Required:**

Firestops must seal all unprotected openings in firewalls. In homes, firewalls are found in the following locations:

- Between the garage and the living space, including the overhead ceiling.
- Between the attic and the living space. Homeowners should lookout for fireplace and wood stove flues that lack adequate fire-rated sheetrock or metal flashing fire-stopping, as in the photograph at right.
- Firewalls that separate condominium units are often penetrated by utilities that serve multiple units. These utilities are sometimes contained inside chases that should be sealed where they pass through the firewall between units. Firewalls between units must be continuous, all the way to the roof.



### **Common Problems With Firestops**



**Missing Firestop:** Unsealed pipe penetrations will greatly reduce the ability for a firewall to contain a fire. This situation is more common in old buildings than in new buildings, due to changes in building code.

**Cable Or Pipe Replacement:** Electricians and plumbers may partially remove a firestop in order to install new cables and plumbing. A firewall's fire-resistance rating will be compromised if the opening created by this removal is not filled.

**Improper Installation:** Firestops will be effective only if they are installed correctly. For instance, firestop mortars are sometimes smeared into place unevenly and lack the required thickness at certain points. Also, firestops that are installed only on one side of a penetration may not be sufficient to prevent the spread of fire through the opening.

### **Common Firestop Materials**

**Firestop Mortar:** Cements made from lightweight aggregates, such as vermiculite or perlite, can be used as firestopping. They are typically colored to distinguish them from other types of cement that lack firestopping characteristics. For example, firestopping mortar made by Nelson is colored red, and 3M Fire Barrier Mortar is colored bluish-gray.

**Intumescent:** Any substance that expands as a result of heat exposure is considered an intumescent. Intumscent used as firestops can be made from a variety of flame-retardant materials, such as graphite, hydrates, and sodium silicates. They are especially useful firestopping materials for electrical cables, which can completely melt or burn away in a fire. The expanding intumescent will partially or completely cover the exposed opening created by a melted wire.

Firestop Pillows: These items contain various flame-retardant and intumescent substances, such as rockwool or graphite. They are filled loosely inside of a fiberglass fabric case that resembles a small pillow. Firestop pillows can be inserted into openings in firewalls and used in conjunction with other firestopping materials.



- Sheet metal
- fire-rated sheetrock

In summary, firestops are designed to prevent the spread of fire through unprotected openings in rated firewalls.

### **Fireplace Fuel**



Fireplaces and wood stoves are designed to burn only one type of fuel. Used as all-purpose incinerators, these devices can pose the following hazards:

Harmful vapors can vent into the living space. Even the most efficient fireplaces will vent directly into the living space while they're opened and closed for cleaning and refueling, exposing everyone in the house to potentially dangerous fumes. Harmful vapors will vent to the outdoors.

Most newer fireplaces and wood stoves do an excellent job of funneling smoke and fumes to the outdoors, but the problem doesn't end there; this pollution persists, contaminating household and environmental air. Burning inappropriate fuel can cause mechanical damage. Chimneys can become lined with residue from inappropriate items, which may lead to a dangerous chimney fire. The fumes from certain items will quickly wear out sensitive components, such as catalytic combustors in wood stoves. Read the following guidelines to better understand what can and cannot be safely burned in a residential fireplace or wood stove.

### **What Can Be Burned In A Fireplace?**

Dried, cut firewood. An adequate fuel supply will consist of a mixture of hardwoods, such as maple and oak, and softwoods, such as fir and pine. Softwoods ignite quickly and are useful in the early stages of the fire, while hardwoods provide a longer-lasting fire, and are best used after preheating the chimney. Despite the different burning characteristics of hardwoods and softwoods, which can be attributed to differences in density, the heat-energy released by burning wood is the same, regardless of species. To dry out wood, it should be stacked in an open area so the sun can warm the pieces and the breezes can carry away the moisture. Poplar, spruce and other softwoods generally dry quickly, as do wood that has been split small. Adequately seasoned wood has a moisture content of less than 20%, which can be checked using the following indicators:



Adequately seasoned wood has a moisture content of less than 20%, which can be checked using the following indicators:

- The wood has darkened from white or a cream color to yellow or grey.
- There are cracks or checks in the end grain.
- A hollow sound is produced when two pieces of wood are banged together.
- You can split a piece and feel if the new surface is damp or dry.
- The wood does not hiss while burning.
- You can check its moisture content with a moisture meter.

**Pallets.** Generally, pallets are safe to burn in fireplaces, although those that are treated with the fumigant methyl bromide (labeled with the initials MB) are unsafe to burn.

Also, pallets may have been exposed to a variety of chemicals while they were in use. Aside from these concerns, pallets produce a hot flame because they're usually very dry and their segments are thin. Be careful to check for nails while cutting pallets, as they may damage a saw blade. You may also wind up with nails in your ash, which should be disposed of far from roads and driveways.

**Fallen Tree Limbs.** These can generally be collected and used for kindling, provided they have been given time to dry.

**Wood Collected From Housing Developments.** If it is truly trash and not someone's property (including the housing contractor's), using scavenged wood that has been cleared away for

Housing developments is good for burning. Try to obtain it before the non-lumber grade wood is pushed into massive piles and burned as a means of disposal by the contractor.

**Fire Logs.** These artificial logs burn relatively cleanly and release less ash than their natural wood counterparts.

### **What Should Never Be Burned In A Fireplace?**

**Painted Wood.** Paint contains heavy metals, such as lead, chromium and titanium, which are used to make the different colors. These metals, especially lead, can be toxic even in small quantities if inhaled.

**Pressure-Treated Wood.** Wood is commonly made resistant to fungus and insects through the addition of copper, chromate and arsenic, in a process known as CCA treatment. CCA treatment places roughly 27 grams of arsenic in every 12-foot 2x6, which is sufficient to kill about 250 adults, which is why it is illegal in the U.S. and Canada to burn pressure-treated wood. Vaporized CCA wood, known as fly ash, is extremely toxic; in one case, as reported by the American Medical Association, a family was stricken with seizures, hair loss, debilitating headaches, blackouts and nosebleeds from fly ash released when they unknowingly used CCA wood to burn in their fireplace. Even the family's houseplants and fish succumbed to the toxic fumes.

**Plywood, Particleboard, Chipboard Or OSB.** These manmade woods release formaldehyde, and potentially hydrochloric acid or dioxin, when burned. Some areas have outlawed the incineration of some or all of these artificial wood products.

**Rotted, Diseased Or Moldy Wood.** This wood will not burn as long as normal wood, may produce bad smells when burned, and could bring insects into the house.

**Damp Wood.** Wood that has a moisture content higher than 20% will burn inefficiently and will contribute to a greater accumulation of creosote in the chimney, as well as air pollution.

Allergenic plants. Urushiol, which is the chemical that induces the typically minor allergic reaction when skin is exposed to poison ivy, poison sumac or poison oak, is far more dangerous when inhaled. Urushiol is not destroyed by fire and can quickly cause life-threatening respiratory distress if any of these plants are burned.

**Dryer Lint.** While it's often used effectively as a fire-starter, lint can contain a wide array of dangerous chemicals that come from your clothes and fabric softener.

**Trash.** Never burn household garbage, as it contains a range of potentially hazardous materials and chemicals that react in unpredictable ways when burned together. Newspaper ink, plastics, aluminum foil, plastic baggies, and whatever else constitutes your particular trash can create a deadly chemical cocktail.

**Driftwood.** Wood found on the beach of an ocean or salty lake will release salt when burned, which will quickly corrode any metal and etch the glass of a wood stove or fireplace. Catalytic converters are especially vulnerable to salt corrosion. In addition to potential damage to the stove or fireplace, the EPA claims that driftwood releases toxic chemicals when burned.

**Oil Filters.** Used oil filters and oil should never, ever, be burned as they produce toxic smoke and will cause damage to the stove.

In summary, use only approved and appropriate fuel to burn in your fireplace or wood stove, because certain items should never be burned because they can cause problems ranging from minor irritation to a hazardous health threat to your family.

Information Credit: Nick Gromicko and Rob London

## **Industry News**

### **[Sustainable Laneway Living In Vancouver](#)**

West House is a first-of-its-kind, sustainable-living home. Formerly a star attraction at the City of Vancouver's Yaletown Live Site during the 2010 Olympic Winter Games, it now occupies a corner lot on Stainsbury Avenue in East Vancouver. West House's living area of 610 square-feet with an additional garage of 226 square-feet will produce more energy than it uses through insulation, a heat recovery ventilation system and two types of solar energy. The garage features an electric car-charging outlet.

### **[What Saves Energy & Why](#)**

Michael Blasnik online slide show describes what saves energy and why, when looking at retrofitting existing homes.

### **[Solar Hot Water & Space Heating Systems](#)**

Green Building Advisor describes solar collectors and how they can heat water and living spaces.

### **[10 Products, Technology, Systems For The Future](#)**

Builder Magazine says it's hard to predict what products, technology, and systems will be important in the next 10 years, but green experts say the looming energy crisis can give us a pretty good idea.

### **[Air Sealing & Insulating Existing Attics](#)**

Fine Homebuilding describes a comprehensive approach to attacking insulation and moisture problems, by examining procedures, special equipment, and materials to weatherize an old house. (PDF)

### **[Incentive To Replace Older Oil Heating Storage Tanks](#)**

Canadian Oil Heat Association is encouraging homeowners across Canada to upgrade their storage tanks with their incentive program Retire Your Tank that gives homeowners a \$125 rebate on the purchase of select models. The program runs May 15 to December 31, 2011.

### Services Provided By Pacific West Home Inspections

- Pre-Purchase & Pre-Selling Residential & Commercial Inspections
- Year End Warranty Inspections
- New Home Deficiency Inspections
- Pre-Renovation Inspections
- Wood Burning Appliance Inspections
- Chimney Inspections
- Grow-Op Inspections
- Mould Inspections
- Indoor Air Quality Investigations
- Home Renovation Consultant
- Seasonal Home Check & Maintenance
- Water Quality Testing
- Air Testing
- Radon Testing



**Serving Clients For Over 12 Years**

### About Us

At Pacific West Home Inspections, you will find the home and property information, educational and industry news that will help raise your professionalism and that of the house and property inspection industry as a whole. Dave Brice of Pacific West Home Inspections is the editor and publisher and has been involved in the home and property inspection field since 1998 and the construction industry for over 25 years. For additional information about the services Pacific West Home Inspection provide articles and E-Books that can be downloaded for no cost, go to [www.bchomeinspections.ca](http://www.bchomeinspections.ca) website.

**Note:** The Views expressed herein represent the opinions of the editor and Pacific West Home Inspections only and do not form any opinion, position, or policy of any organization outside of Pacific West Home Inspections. Contributing articles and credits are presented where indicated. Copyright (c) Pacific West Home Inspections.

**Editor:** Dave Brice CHI

**Owner -** Pacific West Home Inspections & Pacific West Home Renovations & Consulting

**Email:** [inspector@bchomeinspections.ca](mailto:inspector@bchomeinspections.ca)

**Cell:** 250 833-8955

**Sponsor:** This newsletter is published and sponsored by:

Pacific West Home Inspections

[www.bchomeinspections.ca](http://www.bchomeinspections.ca)

Applied Science  
Technologists & Technicians  
of British Columbia



British Columbia  
Institute of Property  
Inspectors

