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Reducing Risk of Water Heater Failures

Most of us forget about water heaters until they fail, causing damage with slow leaks or extensive flooding. Repair of water damage from failed residential heaters typically costs as much as $5,000, while failures in commercial properties can run to $500,000 or more.

How and Why Water Heaters Fail

Every water heater will eventually fail, either by a slow leak or by catastrophic failure (crack or bursting, with total release of water). A typical residential heater tank typically holds 40-80 gallons of water, but when the tank fails, fresh water will flood from the inlet valve until it is turned off. Even a slow leak can cause considerable damage, leading to decay, mold, mildew, warping, and eventual structural damage.

> *It is more cost-efficient to replace heaters **before** they fail than to deal with the costs and aftermath of water damage. Plan to replace the heater before it shows signs of weakness or failure, usually before it is 10 years old.*

Several factors contribute to failure, including normal wear and tear; accumulations of corrosive sediment; corrosion of heating elements, anodes, and the tank itself; and, most of all, the age of the heater.

Most water heaters last only 5-10 years, depending on water type, intensity of use, and the owner's care and maintenance. According to the Institute for Business and Home Safety, the chance of failure rises steeply in heaters more than five years old. Nearly three quarters of all heaters fail before they are 12 years old.

Proper Installation Minimizes Risk

Install the water heater on the building's lowest floor to minimize damage should a leak occur. California building codes require that new or replacement heaters be secured with *earthquake straps* (steel bands at top and bottom, secured in wall studs).

Several inexpensive devices can prolong the life of the water heater or alert you to leaks and other problems. A *temperature/pressure relief valve* (T&P) will release water if the inside pressure or temperature become too high. A *water flow sensor* in the main water line sounds an alarm when water flow during a given time exceeds the normal flow programmed for that time. If the water heater bursts, the sensor will detect the prolonged increased flow and shut off the fresh water supply.

Leak detectors can detect water in places that should normally be dry, such as the floor beneath the heater. When a leak or overflow activates the sensor, the shut-off valve closes automatically to stop the flow of additional water into the system. Install a *catch pan* under the heater to catch small leaks. Connect its drain to a waste line, sump pump, or other means of removing the water from the building.

Regular Inspection Identifies Problems

Regular inspections can identify potential problems and reduce risk of a catastrophic failure. Here are some elements of a basic inspection:

Look for *signs of imminent failure*, including water dripping from the heater; a rusting or cracked tank; hissing or whistling (sign of a worn-out valve); shortage of hot water; discolored water; or sediment in the water. If any of these signs is present, turn off the heater, disconnect it from the water supply, and contact a professional immediately.

Ensure that the tank and all connections are free from rust, dirt, corrosion, or soot. Look for active leaks or signs of leaks (dampness, stains, mold, or mildew).

Check for leaks and corrosion at all the places where water flows in and out of the tank, including the bottom drain valve, the drain pipe, the inlet and outlet pipes, and the temperature/ pressure relief valve.

If water is coming from the T&P valve, the valve may be defective, or the pressure in the tank may be too high, indicating that tank failure may be imminent.

Regular Maintenance Saves Money

Regular maintenance will extend the life of your water heater and will reduce the risk of damaging leaks and failures. These three steps are most important:

Every six months, *flush the sediment* from the bottom of the tank by draining some water through the drain valve. Turn off the water and power supply first.

Inspect the anode annually to assess corrosion and to determine when it should be replaced.

Test the temperature/pressure relief valve at least once a year to verify that it is functioning and unobstructed.

Be sure to maintain complete records to document purchase, installation, inspection, and maintenance.

For more information on inspection and maintenance of water heaters, request the Sequoia *Risk Management Guide* "Understanding and Preventing Water Heater Failures." (SRMG-006)