

What is an S-Trap and why is it not recommended by my inspector?

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A common plumbing issue found under sinks, mainly in older and remodeled homes, is the presence of S-Traps. These plumbing traps are shaped like an “S” laying on its side.



Created in 1775, the S-Trap was state-of-the-art equipment. A Scottish watchmaker, Alexander Cummings, contributed to the development of running water by bending the pipes beneath a toilet.

The innovative bend in the drain line naturally held water to create the essential trap sealing. Although Alexander’s S-Trap was indeed a positive step, the barrier was extremely susceptible to siphonage. Therefore, it inconsistently prevented sewage gas from entering the home. Plumbers soon added crown outlets and drum traps onto the S-Traps to prevent the siphoning issues, but also were inconsistently effective and riddled with failures.

S-traps were commonly used in areas where proper vent lines were not available or not installed, prior to their ban in 1948. Additionally, they are found in remodeled homes when the plumbing was a DIY project or a quick fix. Unfortunately, S-Traps are still sold today in many major hardware and home improvement stores, even though its use has been banned by building codes for over half a century.

Many of us think that the only reason for a drain trap is for “trapping” items that inadvertently fall down the drain, like a wedding ring, or contact lens that happens to fall in the sink.

Although retrieving lost items that fall down a sink drain is a side benefit of plumbing traps. The real reason traps are required at each plumbing fixture (toilets and bathtubs included) is to prevent dangerous sewer gases from entering the home.

A plumbing trap helps keep those gases out of the home by their shape. The “U” shape at the bottom of all traps, trap enough water in them to form a water seal. Having enough water in the bottom of the trap prevents sewer gases from flowing up through the trap and into the home.

If you have ever walked through a home that has been vacant for a while, you will likely smell sewer gases because the water in the traps has evaporated out over time. (Because of this, when a home is vacant for a while, or you are on an extended vacation, someone should come by once in a while and run some water at each sink and tub, and flush the toilets in order to re-fill the traps with enough water to keep them sealed against sewer gasses.)

So, back to what's wrong with an "S" shaped trap? It has the "U" shape at the bottom to trap water so what is the problem? S-Traps were allowed for many years until someone figured out that when someone fills a sink with water that has an S-trap, like when hand washing dishes and then they pull the drain plug, the shape of the S-trap allows the draining water to siphon ALL the water out of the trap and down the drain with it, just like when someone siphons gas out of a car's gas tank. When that happens, the protective water seal at the bottom of the S-trap is gone and those nasty sewer gases can come right up into the home again.



To prevent the siphoning issue, plumbers developed a new shape of trap commonly called a P-trap or a J-trap (again due to its shape). The shape of this trap prevents the water at the bottom of the trap from siphoning out by making the drain water move horizontally for a few inches before draining down again; usually behind the wall. This change was improved again to provide a vent line at the point where it turned downward which allows the air to enter the line, preventing the siphonage and letting the sewer gases escape above the roof.

So, what to do if you have any S-traps in your home? Call a licensed plumber right away and get them replaced! There are now several options for effective and safe venting of your plumbing system, many of which are inexpensive. If you do not take care of the issue, you are running the risk of more than just a stinky home, those sewer gasses can make you sick and can be harmful to your health, especially when people are sleeping, and the home is closed up for the night.