Information below on sewer backflow valves is a summary from some research found on the internet (these are not my words) - P. Hartz

A sewer backflow valve can prevent waste water backups, particularly from a public sewer. Sewer backflow is a term used in plumbing for unexpected and unwanted flow of water in reverse direction. Normal plumbing allows wastewater to flow from a home to the city sewer, but backflow is the exact opposite.

When backflow happens, there can be a serious health risk due to contaminated waste water entering your premises. Backflow occurs when the municipal drainage system or city sewer overflow and sends water back through a sewer pipe into your home. Immediate proper clean-up is required to prevent risk of disease and further damage to property. To prevent this problem, many homes would benefit greatly from a sewer backflow valve.

A sewer backflow valve is designed to do one function only: It prevents backflow from a municipal drainage system or city sewer into your home.

What causes a sewer backflow?

Sanitary sewers work by the force and principal of gravity. So wastewater flows in the direction of the natural slope of the pipe. This is the main reason that the sewer mains owned and maintained by the city are typically located between 10′ and 15′ deep. In many areas they are much deeper than that. Sewer backflow can be triggered by a number of different situations, some examples follow:

- A blockage (in either a private or city sewer pipe) caused by tree roots, construction mishaps, plumbing system deterioration.
- Insufficient capacity due to residential growth
- Cracks in the pipe
- A back-pitched drain system
- A surcharge due to heavy rain or a large snow melt

In an office and home plumbing system, blockages are often caused by accumulation of grease, hair, and any physical obstruction in the pipe. It may even include napkins, diapers, cigarette butts, toilet paper, and

more. When your sewer pipe is blocked, wastewater has no chance of flowing in the right direction, hence backflow.

But the most serious and damage causing sewer backflow conditions occur when a public sewer system becomes surcharged.

If the backflow comes from your city sewer, the most common culprit is a flood or any massive amount of water either from rain or a snow melt.

Failure of a sump pump can also possibly lead to sewer backflow, but nowhere near as severe as that of a public sewer surcharge.

There are three main types of sewer backflow valves. The price range to purchase and install can vary greatly, depending on the valve. And the effectiveness of the valve can likewise vary greatly. Each sewer backflow valve has its own attributes, which must be considered carefully before installation.

Sewer check valve

As sewer valves go, a check valve is the least expensive, and the type most often installed. A check valve does not prevent backwater 100%, so it is ideal for short-term backups lasting less than a full day. Like all sewer valves, once the flapper closes, water use inside the building must be limited. When a public sewer backup recedes, the check valve will automatically allow the waste water from your home to escape, and run out to the public sewer. A check valve should be cleaned once a year to ensure the flap opens and closes fully.

Automated flood gate

An automatic flood gate valve is the most sophisticated and 100% effective way to stop waste water and the damage associated with it. An automatic flood gate valve works on air pressure, and (as its name implies) is fully automatic. Once closed, its stainless steel knife edge stops backwater 100% over prolonged periods of time. Like all specialized plumbing devices, this device should be installed only by a licensed plumber.

If installed incorrectly not only will it not work properly, but the product warranty will be void. Because an automatic flood gate valve is larger than the typical sewer backwater valve (mainly due to the air chamber), the installation must be considered and planned out carefully.

Manual sewer gate valve

A manual sewer valve, as its name implies, must be opened and closed manually. That means one must anticipate when a backwater condition will arise. And likewise, one must know when the backwater has receded. While a dependable device, the chance of misuse and backwater damage occurring regardless, make this a device for only very particular situations.

How, Where, and When to install a sewer backflow valve

In the case of installing a sewer backflow valve, most people fail to realize the implications of an improper installation. Not only will sewer backwater remain a problem, but an incorrectly installed sewer valve can actually exasperate the problem. As an example, a sewer backwater valve must be the the first fitting on the house side of the inside of the foundation wall. Installation and maintenance can be simple, but sometimes are quite cumbersome. If there is any sort of outlet before a sewer backwater valve, backwater can rush out of it with incredible force. The waste water damage can exceed that of before the sewer valve was improperly installed.

A sewer backflow valve can be installed in the main sewer pipe outside of your home or in the basement at the farthest exit point from the home. The device is installed downstream to prevent sewage from flowing into your sewer pipe above the device. Installation depends on the manufacturer's assembly instruction, but usually there are only three different versions: Threaded and Glued method which involves a threaded T device into pipe, Compression Fitting method which relies on pressure washer to seal around pipe, and Bell (hub) and plain end of pipe. In any of the three cases, an improper installation will lead to waste water leakage, a failure of the device, or both.

In addition, many buildings, due to their design, are not a candidate for a sewer valve. Always consult a licensed professional before installing any type of backflow preventer.

The following are the three most common installation errors:

1. ***When a house sewer also accepts rain water flow from the roof, or area drains, a sewer backwater valve cannot typically be installed.***

2. Installing a sewer backwater valve on the house side of the trap is an improper installation. If the trap plugs leak, or blow off, you will be flooded with waste water.

3. If adequate pitch of the pipe is not available, the valve will neither open or close properly. In addition the house drain may suffer from frequent clogs.

If a backflow preventer is installed maintenance is required

Regardless of the installation method and type, a specialized sewer backflow prevention device has internal seals, springs, and moving parts. It means they are subject to wear and tear over time. All sewer backflow valve devices require periodic maintenance, and more importantly should be tested by a knowledgeable person.

Even a sewer backflow preventer or valve test should be performed annually by a knowledgeable individual, preferably the licensed firm that installed it. Even a partially blocked device will not function properly. If the gate of a valve has not moved in a long period of time, it can become stuck in the open position just when you need it the most.