

PLUMBING

---

Pillar To Post Continuing Education Program



# Table of Contents

- **Chapter 1:** Overview and Objectives
- **Chapter 2:** The Top 5 Client Plumbing Concerns
- **Chapter 3:** Poor Water Flow
- **Chapter 4:** Not Enough Hot Water
- **Chapter 5:** Leaks and Floods
- **Chapter 6:** Safe Drinking Water
- **Chapter 7:** Damaged or Poor Performance Fixtures
- **Chapter 8:** Understanding the Technical Stuff
- **Chapter 9:** CEP Quiz
- **Chapter 10:** Presentation Feedback



## CHAPTER

---

## Overview and Objectives

Chapter

1

## Overview and Objectives

Questions about plumbing are common in the Real Estate industry. In this workbook we will explore the plumbing system as it relates to real estate professionals in their day-to-day dealings with their clients.

This resource will also provide you with more insight into how understanding the plumbing system relates to a Realtor's risk management and liability concerns.

## Learning Outcomes

The plumbing system must function properly every day, not only for convenience sake, but also for our health. Nobody ever thinks about the plumbing system until it doesn't work. This practical, one-hour course covers everything a real estate professional should know about a residential plumbing system.

### This course will teach you:

- Basic plumbing terms and definitions
- The most common plumbing problems, the causes and easy troubleshooting
- What clients' expectations are regarding plumbing

### By the end of this session you will be able to:

- Explain the distinction between water supply and waste water plumbing systems

**CEP - PLUMBING - STUDENT WORKBOOK  
PILLAR TO POST**

- Describe the characteristics of old and new plumbing materials
- Explain the implications of an old plumbing system and the benefits of upgrading the system
- List the top five water supply plumbing problems and the implications to your client
- List the top five wastewater plumbing problems and the implications to your client
- Troubleshoot basic plumbing problems and offer easy solutions

**This knowledge will:**

- Help you serve your clients better
- Help you answer your clients' questions
- Show your clients that you are a knowledgeable professional

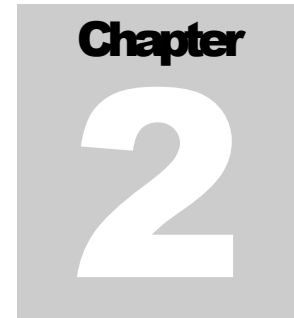
Chapter

2

## CHAPTER 2

---

### Top 5 Client Plumbing Concerns

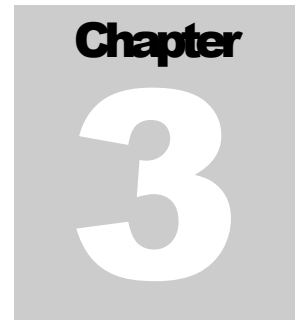


## Top 5 Client Plumbing Concerns

It's no secret that plumbing "gone wrong" is any client's worst nightmare. For those of us who have ever gone camping for a weekend, you know it doesn't take long to miss running water, flushing toilets, clean clothes, and hot showers. These conveniences are the benefits of modern plumbing systems and no one, these days, wants to be without them.

Your client concerns then are **(in no particular order)**:

1. Poor water flow
2. Not enough hot water
3. Leaks and floods
4. Safe drinking water
5. Damaged or poor performance of plumbing fixtures



CHAPTER 3

---

Poor Water Flow



Chapter  
3

## Poor Water Flow

**W**ater flow is one of those things that homebuyers are very concerned about. However many consumers don't understand the difference between water *flow* and water *pressure*. It is essential that you understand the difference because water pressure problems and water flow problems have very different solutions.

- Water **pressure** measures force in pounds per square inch, or “psi”. Water pressure is dictated by the force behind the water delivered to the house through the main. The municipality or water utility is responsible for designing and maintaining their plant so that their customers have *enough* water pressure. However homeowners are responsible to assure that the water pressure inside their home is no greater than the system can bear. So for example homeowners at the top of a hill may wish they had a little more water pressure, while homeowners at the bottom of the same hill may have to install pressure regulators on their main to keep excess pressure from damaging their plumbing.
- Water **flow** measures volume, measured in gallons (liters) per minute. However when most people experience poor water flow, they say they have “poor water pressure”. In fact, it is not uncommon for homes with *low* water flow to have very *high* water pressure!

You can illustrate the difference between water pressure problems and water flow problems with the following example. Imagine you are holding a garden hose with the faucet turned on. By kinking the hose, you restrict the flow of water coming out the end, but a little trickle makes it through. Now suppose that while keeping the hose

kinked you put a pressure gauge on the end of the hose that totally shuts off the trickle. You would see that very quickly the *pressure* on both sides of the kink will be equal, even though you continue to restrict the *flow*. Increasing the water pressure will not really improve the flow, but it may burst the hose.

The thing is – acceptable water pressure and flow are really relative concepts and what it boils down to is what people have become accustomed to. For example, people moving from a condo in a new part of town into an old home on a hill may never be happy with its pressure and will always deem it as a poor simply in comparison. It is important therefore to understand the types of homes your client lived in previously to assist you in answering their concerns.



**Your Buyer May Ask:** Why is the water pressure in this home (older home) not as strong as in my condo?

**Your Possible Answer:** I get this question all the time – the reality is that water pressure varies from location to location within every municipality. Generally speaking, older neighborhoods and those at the top of hills have lower water pressure. But let's make sure you're talking about water pressure and not water flow, which is something that can often be improved...

## The Reality Is...

- Poor flow due to a deficiency in the home's plumbing system is something that might be correctable, but poor pressure due to old municipal pipes in an old area may not be correctable.
- Some areas of some cities just don't have good water pressure, and nothing short of upgrades to the entire municipal water system will improve it.
- You need to assess the water pressure and flow characteristics relative to what you would expect in the area before you assume there is a problem with the piping in the home
- Unfortunately, no amount of replacement piping in the home will increase the water pressure.

## How to Quickly Assess Water Flow and Pressure

Observing the flow will indicate whether there is poor water flow. There are numerous gauges on the market that can perform readings on water pressure, however these are generally not needed to understand whether there are basic water flow concerns



To test, first turn the shower on and then flush a toilet. Observe now the drop in flow at the shower. Demand created by refilling the toilet tank often reduces the flow at the shower.



Prior to flushing the toilet



Here is the same shower immediately after flushing the toilet. Notice a substantial reduction in flow.



Another test that makes the system work a little harder is to turn the shower on at the highest level of the house and have someone turn on the water in the basement, or flush a toilet on the lowest level of the house. This is a good test and in some old homes, you will find that the flow at the shower shuts right off.



This is a good way of assessing the adequacy of water pressure in a home is to turn on the water in the laundry basin in the basement. Since the laundry tub faucet in the basement relieves a lot of pressure energy needed to lift the water to the upstairs, you may observe that there is little or no water flow produced in the upstairs shower. This is an indication of low water pressure. While this is not ideal, it may be typical for a particular area. You can see now this would be useful information for the person that buys the home – “don’t do laundry when someone is having a shower upstairs.”

This gives you an idea of the water flow characteristics. It takes a lot of experience to know what you should expect from a particular house in a given area

## **So, How Can Water Pressure or Water Flow Be Improved?**

So now that we’ve discussed what the issues are, let’s focus on the solutions. As with all things in life there are pros and cons when implementing different strategies. To improve water flow, you can:

### **Replace the Water Main**

Replacing the water main with a larger pipe or simply one without corrosion choking off the flow may be needed on older homes. However, replacing the water main is expensive and it is disruptive to the landscaping so this should not be your first plan.

### **Remove Bottlenecks**

Removing any bottleneck will improve the flow. If a client is unhappy with the water flow in the home, they may be able to improve things substantially by removing any other bottlenecks (not the water main) and save money, too. Some common bottlenecks are interior pipe diameters blocked or reduced at the point of a repair, malfunctioning water softeners, and kinked or damaged “flex” pipe connecting the water heater.

### **Resize the Distribution Piping**

Often the solution is to resize all or some of the distribution piping inside the house. It is almost always worth considering whether increasing the size of the distribution piping in the basement may improve the water flow characteristics throughout the house.

## Replace Old Piping

Old piping, particularly galvanized steel pipe, corrodes from the inside and gradually shuts off flow. Replacing galvanized pipe with copper or modern plastic pipe products not only improves water flow, but it eliminates health and aesthetic staining concerns about the rusty water coming out of fixtures. New piping also eliminates the worry about sudden leaks and damage common with old steel pipe.

## Size Matters

Say the house has a half-inch copper water main, (the water main is about 20 feet long underground), half-inch copper distribution piping in the basement and half inch distribution piping in the walls:

- If the water flow is marginal, it is worth considering replacing the half-inch copper in the basement with  $\frac{3}{4}$  inch pipe
- $\frac{3}{4}$  inch pipe has more than twice the area of  $\frac{1}{2}$  inch pipe, creating less resistance to water flow.
- It does not matter that there is  $\frac{1}{2}$  inch copper upstream of basement pipes (water main)



## Check Your Knowledge

Answer the questions below in the spaces provided

1. What would you say to a client who has just moved from a condo and is considering purchasing an older home if he/she expresses concern about the water pressure?

---

---

---

---

---

---

2. Name three ways to test adequacy of the water flow

---

---

---

---

---

---

3. Why does the size of the water main matter?

---

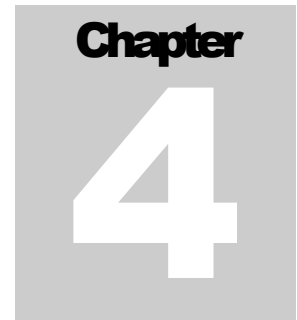
---

---

---

---

---



## CHAPTER 4

---

# Not Enough Hot Water

## Not Enough Hot Water

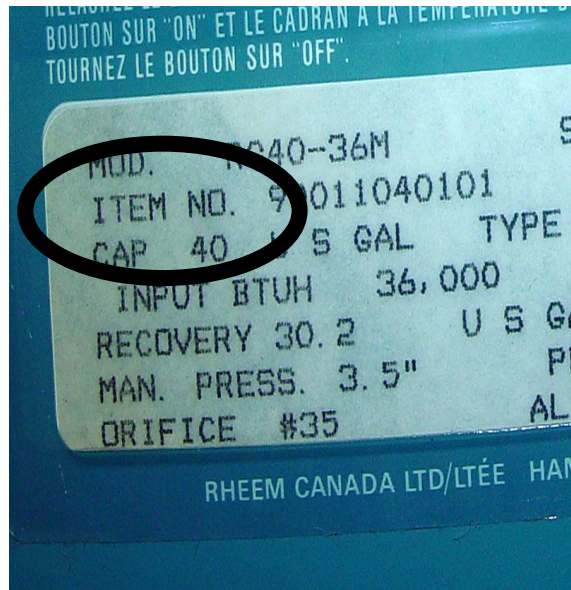
If your client is looking for a home for two adults and a few teenagers and all of them intend to take showers in the morning, then any home may run out of hot water before everyone's done.

You can however make determinations about the amount of hot water available by determining the size of the water heater tank.

Data Plate



This is a hot water heater



This is a close up of the data plate. It indicates 40 US Gallons. This is a common size for a single family home with three bedrooms.



## A Word about Hot Water Tank Capacity

Though the term "capacity" refers to a tank's size, the real capacity of a water heater is a result of two factors

- Storage
- Recovery time (how quickly it can heat a tank full of water)

Conventional water heaters range in tank size from 30 to 120 gallons; the most common sizes are from 40 to 75 gallons. (Short "lowboy" models are available in smaller sizes.)



**Your Client May Ask:** So how much hot water do I/we need?

**Your Possible Answer:** It's important to match size to your family's needs and the number of bathrooms within the home. If you have a tank that's too small, you'll frequently find the water cooling down just about the time you lather up in the shower. On the other hand, if you buy one that's too large, you'll be paying more than necessary to keep the water heated and ready for use.

Here is a look at some typical guidelines for a few typical houses:

1 bathroom	30-40 gallons	Gas or Electric
1 1/2 bathroom	40 gallons	Gas or Electric
2- 3 1/2 -bath	50 gallons 66- to 80 gallon	Gas Electric *
Large, 4-bathroom house or a home with an extra-large bathtub	75gallon 120 gallon	Gas Electric*

\* Because electric water heaters take longer to heat water, large tanks should be bigger than their gas-fired counterpart



Needs can typically be measured by the number of bathrooms in the house, though some circumstances can skew these standards-- a laundry-heavy family with small children or a house with an especially large bathtub, for example.

## Possible Causes for Not Enough Hot Water

### Defective Hot Water Tank

Tanks fill from the bottom through the “dip tube” and draw hot water from the top. If you find that after a short shower you only get cool or lukewarm at the hot water tap, there may be something wrong with the tank - it may be filling at the top because the dip tube is broken, or perhaps the hot water tank is not hooked up properly.



## Check Your Knowledge

Answer the questions below in the spaces provided

1. What does “capacity” mean in reference to a water heater?

---

---

---

2. What would you say to a client if he/she asks about how much water he/she needs?

---

---

---

---

3. If the home has 2-3 ½ bathrooms, what capacity would it require? (provide an answer for (a) electric water heater and (b) gas hot water heater

(a) \_\_\_\_\_

(b) \_\_\_\_\_

4. For a home with 1 bathroom, would a 40-gallon hot water heater be enough?

---

5. In a 4-bathroom home why would you need a 120-gallon tank with an electric hot water heater versus 75-gallon tank with a gas hot water heater?

---

---



CHAPTER 5

---

Leaks and Floods

## Leaks and Floods

**T**here are all kinds of plumbing leaks. Some can flood the home, while others are not nearly so damaging.

**The general sources of leaks are:**

- Shower stall leaks
- Tub overflow leaks
- Pipe joint leaks
- Cold water pipe 'sweating'

### Shower Stall Leaks

One of the most common plumbing leaks comes from a shower stall which may be difficult to detect and expensive to fix...

All shower stalls are set on top of a shower pan, which can be vulnerable to leaks. Water can seep outside a shower stall if the shower pan at the base of the stall needs repair or replacing. Some homeowner's insurance policies cover this kind of work, which should be done by a licensed plumber.

To check a shower stall for such leaks, run the shower at a medium rate for an hour, and then check around the base for water seepage.

A leak from a shower stall or bathtub usually goes for months, even years, before being noticed, resulting in excessive water damage to the house structure below. In such cases, a licensed plumber should be called in to repair the leak and a qualified contractor to repair or replace the damage

## Tub Overflow Leaks

The tub overflow is the device located at the end of the tub just above the drain. It derives its name from the purpose it serves: preventing a tub from overflowing



What you see when you look at a tub overflow is a decorative metal cover. Most sinks also have overflows (a hole beneath the front edge), but with sinks, the overflow is built in--no hardware is attached that can fail and leak.

Sometimes the overflow assembly holds the lever for a built-in drain stopper. There is a gasket behind the cover and on the outside surface of the tub. Beyond the gasket is the pipe that is used to direct overflow into the sewer system. The two screws located in the overflow plate hold together the decorative cover plate, the overflow gasket, and the overflow pipe. When the screws become loose the gasket can leak. Sometimes in newer homes the installer fails to properly connect the overflow drain pipe at all.

If you overfill the tub and the gasket is not tight, it can leak, causing problems behind and beneath the tub that can be hard to detect. This unseen damage can become substantial over time.

## Pipe Joint Leaks

Because water in supply pipes is under pressure, it's usually pretty obvious if a pipe is leaking--especially if the pipe is inside a wall or above the ceiling. When a pipe springs a leak, the situation can get out of control fast.

In some cases the homeowners may have made some emergency or temporary fixes to seal a leaking pipe in a pinch such as with a C-clamp, a small block of wood, and a piece of thick rubber. The homeowner should have called in a licensed Plumber to permanently remedy the situation. Often times however this does not occur and the pipes in the home begin to leak again or worse cause a flood. A qualified home inspector will be able to spot these types of quick fixes in most accessible areas.



Major plumbing problems are best left to those trained in their repair.

## Cold Water Pipe ‘Sweating’

Pipe joints can leak but sweating pipes are more common. A cold pipe will sweat because humidity in the surrounding air condenses on the cold metal. Sweating occurs when the pipe surface is much colder than surrounding humid air. During the summer, the surrounding air is naturally hot; in winter, the air is heated by the furnace. In either case, when warm, humid air reaches cold pipes, drops of moisture form and drip as if there was a tiny hole in the pipe. Water pipes as well as exposed cold copper refrigerant pipes for central air conditioning will sweat in humid conditions.

When condensation dripping from cold pipes is a concern, a simple and inexpensive solution is to install foam rubber pipe insulation to keep humid air away from the pipe.



When the pipes are sweating, it may look like a plumbing leak, but isn't.



**Your Client May Ask:** How old is the plumbing? /How old are the pipes?

**Your Possible Answer:** The plumbing system is very complex and the age of the plumbing may or may not give us the answers as to whether there are any concerns. I would recommend that you have a qualified home inspector inspect

the home and this will provide us with a better understanding of the state of the plumbing system within this home (i.e. leave it to the experts)



## Check Your Knowledge

Answer the questions below in the spaces provided

1. What does it mean if the pipes are sweating? Why does this occur?

---

---

---

2. What would you say to a client who is inquiring about the age of the plumbing?

---

---

---

- 3.



Identify the plumbing fixture shown in the image to the left. What is it and what problems can occur with this fixture?

---

---

---

4. What impact can a shower stall leak have?



**CEP - PLUMBING - STUDENT WORKBOOK  
PILLAR TO POST**

---

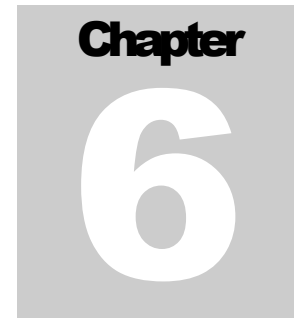
---

---

---

**25**  
**2015/04/18**





CHAPTER 6

---

Safe Drinking Water

## Safe Drinking Water

**S**afe drinking water is more of a concern today than ever before. While the main concern is the cleanliness of the city water supply, some people are concerned about contaminants picked up in the pipes in the house. For example:

- Lead water main
- Lead solder joint in pipes

### Lead Water Main

Lead pipes were used as water mains (from the home to where it joins the city supply) and within homes through the early 1900s. Lead has not been in use in most areas since approximately 1930 - but there are still many lead water mains in service.

#### What is the significance?

Lead is poisonous and it can dissolve into the drinking water. If the water main is lead then the homeowner should replace it.



Until the mid 80's, lead-based solder was commonly used. The copper pipe in this image shows a joint connected with a lead-based solder. While there is very little lead in contact with the water, you should not drink water that has been stagnant in the pipes. You can flush the water from your taps before drinking as you don't want to drink or cook with water that has been sitting for a long time in the lead-soldered pipe. You should run the water until it noticeably gets colder and then a little longer. In addition, don't use water from the hot water tap to cook. Use cold water and heat it on the stove.



**Your Client May Ask:** I have small children, how do I know if the water is safe to drink

**Your Possible Answer:** To be on the safe side it is always best to have a water test done. The water test results will indicate if there are any contaminants that might be harmful to your family's health. Your Home Inspector can do one for you while he/she completes the core home inspection.



## Check Your Knowledge

Answer the questions below in the spaces provided

1. What should the client do if it is determined that there is a lead water main within the home?

---

---

---

1. What would you say to a client with small children who is concerned about the safety of the drinking water within the home?

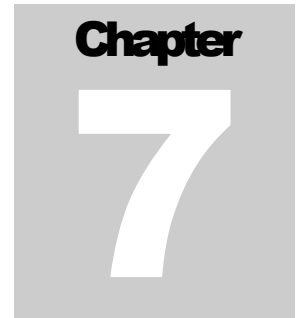
---

---

---

---

---



## CHAPTER 7

---

# Defective or Damaged Fixtures

## Defective or Damaged Fixtures

In most cases this is a maintenance issue that can easily be fixed. It is important to note however that dripping faucets and poor flush on a toilet can make the house appear neglected. This is one of the most easily detectable items a buyer may spot.



When listing a home, repairing these minor items is well worth it. Dripping water discolors sinks and suggests lack of maintenance and faulty or worn-out plumbing. Any indications of plumbing problems will cause concern on the behalf of the buyer, even if unwarranted! A good first impression is important.



**Your Client May Ask:** What condition are the plumbing fixtures in?

**Your Possible Answer:** (the plumbing fixtures are in a bad condition) Typically, these are really maintenance issues that can be easily fixed. When you have your home inspection done, the Inspector will be able to tell us more about whether these are a major or minor issue.



## Check Your Knowledge

Answer the questions below in the spaces provided

1. What would you say to a client who inquires about the general condition of the plumbing system within a home?

---

---

---

---

---

---





CHAPTER 8

---

The Technical Stuff

**Chapter**

**8**

## The Technical Stuff

**T**he Romans had sophisticated water supply and sewage systems, but indoor plumbing is fairly new concept – only since the mid 1900's.

There are 2 main systems:

### **The Public System (covered in this manual)**

- Fresh water supplied from a city-central source via underground piping to all houses in the area
- Waste water collected in sewers, and channeled to a water treatment plant

### **The Private System (not covered in this manual)**

- Wells for fresh drinking water
- Septic system for waste disposal
- Wells and septic system located on the property

## Plumbing – The Basics

Plumbing follows the basic laws of nature -- gravity, pressure, water seeking its own level. Knowing this helps up understand the "mysteries" of plumbing and will assist you in servicing your clients and better answering their questions.

The plumbing system in any home is composed of two separate subsystems.

- One subsystem brings **freshwater** into the home
- The other takes **wastewater** out of the home

The plumbing system in a home is designed to direct fresh water to the installed fixtures and wastewater to the sewer system without incident-- meaning without wastewater overflowing into the home or freshwater leaking somewhere in the walls, or lacking adequate flow at the fixtures. This is what your clients are most worried about – damage or inconvenience!

## The Indoor Water Supply

The water that comes into your home is under pressure. It enters your home under enough pressure to allow it to travel upstairs, around corners, or wherever else it's needed.

Freshwater enters the house via the water main. It goes through the water meter and then possibly through a regulator to limit the pressure (not all systems need to use regulators). Typically, the water supply is then split with one side going to the hot water tank and the other to supply the cold-water needs.

## The Wastewater System

Wastewater exits the house through the wastewater system. The first step in this system is the trap at each fixture. A trap is designed to retain a small amount of water so that sewer gas cannot come up through the pipes and enter into your home. After long periods of disuse, the water in a trap can evaporate and allow sewer gas to enter the home. If sewer smells are noticed in a home after an extended absence, the best first response is to run water down every drain, including the washing machine, and toilets, and then air the house out. The water will refill the traps and often solve the problem.

The waste system is vented to improve drainage and eliminate sewer gas buildup. Depending on the size of the home, one or more two-inch or larger pipes are connected to the waste system and extend up through the roof of the home. This supplies air to prevent drain “chugging” and allow smooth, quiet drainage while also venting off sewer gases.

The waste system collects all the wastewater and finally it exits the house below ground and travels to the municipal sewer through the main. Generally speaking, the homeowner is responsible for the sewer to the point it connects with the city sewer under the street. Tree roots, clogs, and failure or collapse of old pipe in the main to the street can result in expensive repairs, but with reasonable care most homes go decades without the need for sewer service.

## Cross Connections

Fresh water and waste water are two entirely separate systems, for very important reasons. Great care is taken to ensure the two systems don't interact. While it's not a problem for fresh water to get into the waste water system, it is a huge health concern if waste water gets into the fresh water system. This is why the two systems cannot have any kind of connection, or potential connection, between them. While this seems obvious, we do see examples of the waste water and fresh water having a direct connection between them – called a cross connection. You may have seen inspection reports where the inspector has indicated that there is a 'cross connection'. Correction of cross connections is often simple, but this should not reduce the urgency of the repair.

## Spotting the Water Main



This is called the water main - also called the service pipe. The water main is the pipe that connects the city water piping to the house. The water main is usually owned by the home owner up to a point. At some point, usually at the city water meter, the water main becomes the responsibility of the utility.

## **Spotting City Main Shut Off Valve**

The shut-off valve belongs to the city. This shuts off the water supply to the house. It would be shut off if you had to replace your water main or the house main shut-off valve. Generally speaking, the house side of the city shut-off valve is the responsibility of the home owner, and the city side of the water shut off is the responsibility of the utility. This is a good tip to help you find the water shut off valve inside the house – it is likely in the basement directly in line with this valve.



**This is the city shut off valve - in this case, it's in the sidewalk in front of the house**

**A close up of the city shut off valve**

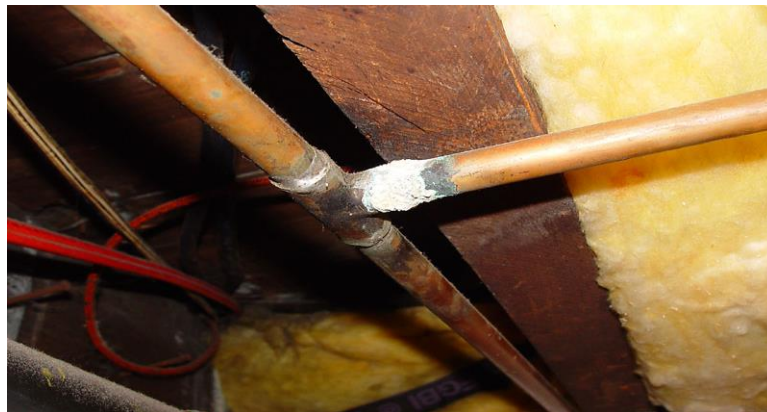
## Spotting House Main Shut Off Valve



Shut Off

This is the shut-off valve inside the house. If you shut this off, all of the water in the house gets shut off. The location of the house shut-off valve is a good thing for a home owner to know in case the water has to be shut off in a hurry (like if the toilet tank cracks and starts flooding the bathroom and there is no local shut off for the toilet) In this case, a ¼ turn of the red handle will shut off all of the water to the house. Many shut off valves require several turns of a knob.

## Spotting Distribution Plumbing



This image shows copper distribution plumbing. After the house main shut off valve, the cold water piping branches off to the various areas of the house and to the hot water tank.

## Supply Plumbing Material

- Galvanized steel
- Copper
- PVC
- Polybutylene
- Lead

### Galvanized Steel

Galvanized steel plumbing rusts on the inside. When new, this material provides ample room for water flow. When old, the opening may get smaller, limiting water flow. Galvanized steel was expected to last about 50 years. Galvanized steel has not been used for residential installations for about 50 years. If the home has it, it may be acting as a bottle neck in the system, could suddenly develop leaks, and should be considered obsolete.

### Copper

Pipe made of copper should last the life of the house. It has been used since the 1950's and is the most common material for the distribution system.

### PVC

In some areas, PVC has been used extensively. There were some problems with this system that have been ironed out over the years. Only careful inspection by a professional can determine the condition of the PVC piping in a particular home.

### Polybutylene

Poly pipe first saw widespread use in mobile homes in the 1970's and spread into site built homes in the 80's and 90's. It is dull gray colored tubing. Low material and installation cost of poly pipe enticed many builders to continue trying to use it in spite of widespread reports of problems. Different connectors and installation methods were tried, and often copper pipe was "stubbed out" at visible locations within the home, causing some homeowners to think they had copper plumbing. Eventually large scale product recalls and new, more reliable alternatives

eliminated polybutylene from new construction. Ask your home inspector for more information on the prevalence of poly piping in your area.

## **Lead**

Lead was used for distribution within the home and for water mains (pre 1930's). Lead looks a lot like galvanized steel but its joints are not threaded like steel. Sometimes it is impossible to see the water main to determine if you have a lead main.



If you have a magnet handy, you have a quick way to determine if you are looking at lead or galvanized steel distribution pipe. Lead is non-magnetic, while galvanized steel is magnetic.





## Check Your Knowledge

Answer the questions below in the spaces provided

1.



Label the following diagram.

2.



Identify the plumbing fixture show in the image to the left.

3. The plumbing system in any home is composed of two separate subsystems. What are the 2 systems?

**CEP - PLUMBING - STUDENT WORKBOOK  
PILLAR TO POST**

---

**42**

**2015/04/18**





## CHAPTER 9

---

### CEP Quiz

## Quiz – Plumbing

Name: \_\_\_\_\_

1. List two water supply piping materials:
  - a.
  - b.
2. List two things that can cause poor water flow:
  - a.
  - b.
3. Describe a simple test to observe the water flow characteristics in a home:
4. Give two upgrades that will improve water flow:
  - a.
  - b.
5. For health reasons, what should you do before drinking water from the tap if you have been away from home for a week?
6. What is the purpose of the plumbing vent?
7. If there is a sewer smell coming from the basement floor drain, what should you do?

**CEP - PLUMBING - STUDENT WORKBOOK  
PILLAR TO POST**

---

**45**

**2015/04/18**



**Chapter**  
**10**

CHAPTER 10

---

Presentation Evaluation

**Presentation Evaluation – Plumbing**

---

46  
2015/04/18

**CEP - PLUMBING - STUDENT WORKBOOK  
PILLAR TO POST**

**TECHNICAL CONTENT**

	Excellent	Average	Poor	No Opinion
Presenter's knowledge of subject matter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to keep you interested	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discussion / overview / recap	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How well did this course meet your expectations?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

---



---

**ORAL PRESENTATION**

	Excellent	Average	Poor	No Opinion
Explanation of objectives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Voice (volume, clarity, speed)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Answers question clearly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

---



---

**VISUAL PRESENTATION**

	Excellent	Average	Poor	No Opinion
Voice (volume, clarity, speed)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Answers question clearly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effectiveness of visual aids	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Presenter's eye contact	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

---



---

**MATERIAL HANDOUTS**

	Excellent	Average	Poor	No Opinion
Effectiveness of handouts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

---



---

**Please complete this portion:**

Location: \_\_\_\_\_ Date: \_\_\_\_\_

**CEP - PLUMBING - STUDENT WORKBOOK  
PILLAR TO POST**

Name (optional): \_\_\_\_\_ License# (optional): \_\_\_\_\_



# **Pillar To Post**

---

© Pillar To Post

14502 N. Dale Mabry Hwy., Suite 200,  
Tampa, FL 33618

5805 Whittle Road, Suite 211  
Mississauga, Ontario  
L4Z 2J1

---

02/20/2008

---