

# Utility Shut-off & Safety in an Emergency

If a crisis hits your home, neighborhood, town, state or region it pays to be able to locate and shut off your utilities before they can compound the problem.

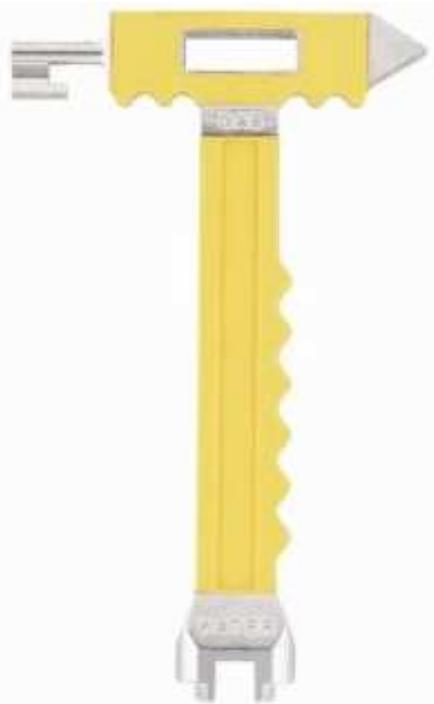
Knowing where your utility mains are and how to operate them is key to household safety and can significantly decrease property damage during and after an emergency.

**Make sure every member of your household is familiar with the location of your main water, electric and gas switches and valves and knows how to operate them.**

If the crisis is slow moving, where you have some time to prepare, like a hurricane – shut off your utilities BEFORE the crisis hits. This greatly reduces the chances of additional sparks, floods, gas leaks and the like and keeps you much safer in your home during the crisis to boot.



Most municipal utility shut-offs require some kind of tool. Each utility has its own versions of the various meters and such to shut off any gas, electric, water, propane and sewer intakes to your home. So be sure to contact your local utilities and or propane, well and septic system vendors for specific information on your systems. Also, be sure to measure exactly what size each of these wrenches or tools need to be, as different municipalities utilize different sized valves, switches and such. *You want a tool that fits perfectly, so it works perfect!!.*



Orbit Gas & Water Shut-off Tool

Everyday tools can work, but the going is tough and slow. So if you have the required tools in your household emergency kit, this will save you time, energy and frustration, if not money and peace of mind too.



In the meantime, the follow guidelines should be helpful. (You may want to keep a copy of your utility shut-off instructions in your Emergency Documents Book.)

## How to Turn Off Your Electric Service

Electricity is wonderful, but it is also very dangerous when not properly contained. Water or damaged and exposed electrical wires can cause an electrical shock or a fire hazard. It is wise to teach all responsible household members where and how to shut off the electricity.

You should turn off your electric service if any of the following are true:

- If you have major **flooding** in your home. Once the water covers an outlet or other exposed electrical wire, the water acts like a huge extension to the wire and becomes a shock hazard.

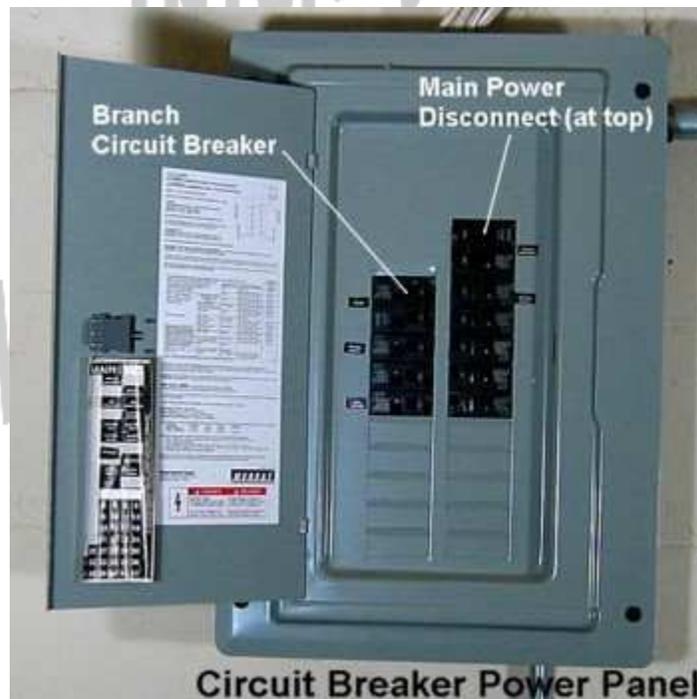
- If your house sustains **structural damage**. There is a good possibility that electric wires are damaged or even exposed.
- If you have had a **fire** then your electric service should remain off until a professional is able to ascertain any damage to your electric wiring.
- You smell burning material during a complete power outage.
- The area around electrical switches or plugs turns black or is hot.
- Burning occurs in electrical devices or large appliances.
- You smell burning insulation (very distinct odor).

### Electric Shutoff

Electric panels and shutoffs vary *widely*. You will need to locate your main electric panel and find which switch or circuit breaker shuts off the main feed. Simply move the lever or handle to the off position to disconnect the power.

Some buildings are non-standard and may have multiple breaker boxes and feeds. However, most residential locations have a single feed from the electric company and the process will be very simple once you locate the main breaker panel.

Here is an example of what a breaker panel might look like. Note the red arrow indicating the main switch you need to turn off. Most panels will have the main breaker marked.



### Alternative Electrical Shut-off

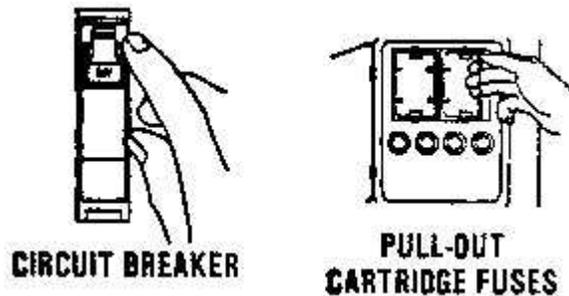
Alternative electrical energy systems can be grid tied or off-the-grid. The electrical generator can be from the sun, wind, water and in some cases geothermal. Most systems then charge a battery bank, which leads to the house circuit box.

If the system is grid tied, by US code, it has to have a UL tested emergency cut-off switch, that automatically shuts off if the grid fails. In order for an alternative energy system to function in a grid down scenario, a Transfer Switch needs to be in place to feed the structure electricity directly from the alternative energy generator and or battery bank.

For an off-the-grid electrical energy system, if it was done right, you will still have one of these emergency cut-off switches, which is usually installed between the battery and circuit box. Some systems have two of these shut-off switches – one between the alternative electrical generator and the battery bank, and a second between the battery bank and the circuit box.

Determine how your system is set up and then familiarize household as to where these are and how to switch them off.

**Important Note:** Shutting off the main breaker *only* disconnects the electricity to the internal wiring *in the house*. The line from the electric company will still be active! This is especially noteworthy if there are downed electric lines in your yard. Turning off the main breaker will not *de-energize* the downed line. You should exercise utmost caution around any downed lines from the power company.

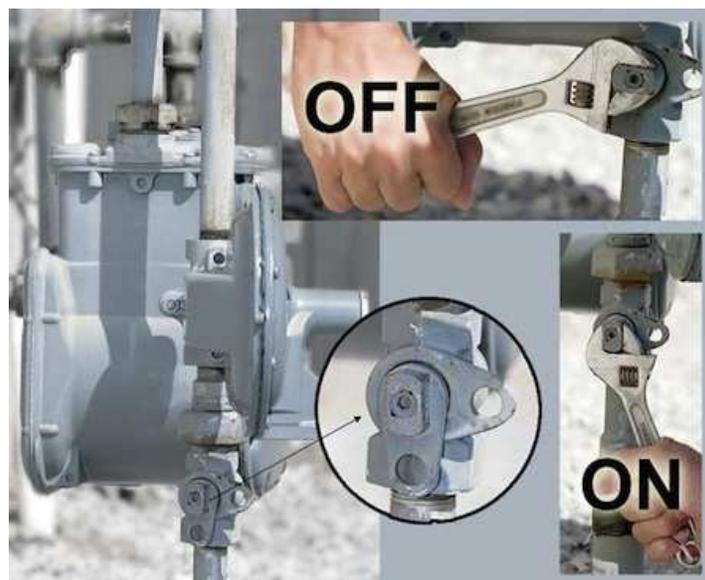


Video: Turn Off Electricity at the Circuit Box @ <http://www.youtube.com/user/EMDPPrepare#p/u/14/bvw6D76xfyE>

## How to Shut Off Natural Gas or Propane

The ability to turn off the home's gas supply is one of the most important to a homeowner as gas hazards pose one of the biggest dangers to the home.

Most urban and suburban locations have **natural gas**. Home's fed by natural gas should have an aboveground meter located outside the home. The shutoff valve will be located on the pipes that connect to the meter. Shutting off this valve requires a wrench. Special gas valve shutoff wrenches available for purchase have openings on either end that fit the standard gas valve. Turning the valve 90 degrees will shut off gas service to the home.



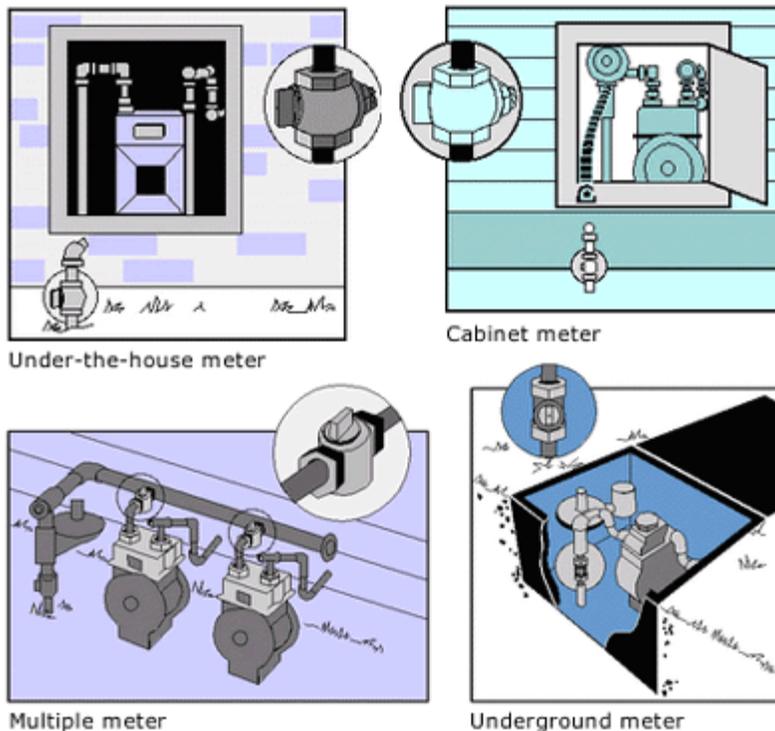
In earthquake-prone states like California, seismically triggered automatic shutoff valves can be purchased by the homeowner and installed by a professional. These devices will automatically disconnect the gas supply to the home in the event of seismic activity. *"Installation can be done by a plumber or a specialty contractor,"* says Martin Simenc, president of Home Safety Services (<http://www.homesafety.net/>), a professional home safety consulting service specializing in making homes safer. For homeowners who do not have an automatic shutoff valve, Simenc recommends storing the shutoff wrench adjacent to the meter. Attaching the wrench to the meter by a rope is an easy way to ensure that the tool will always be on-hand in the event of an emergency.

Under no circumstance should a homeowner attempt to restore gas service to the home. A professional must perform this service so that all existing pilot lights are also re-lit and the gas service in the home is checked for leaks.

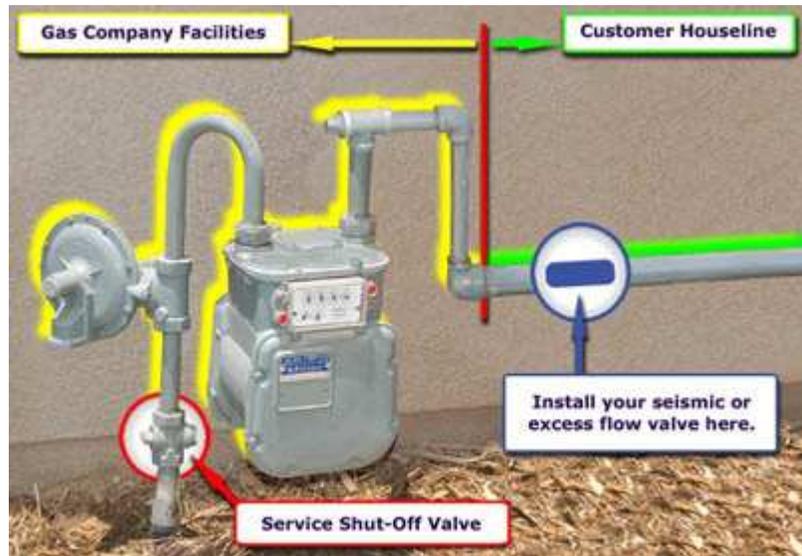
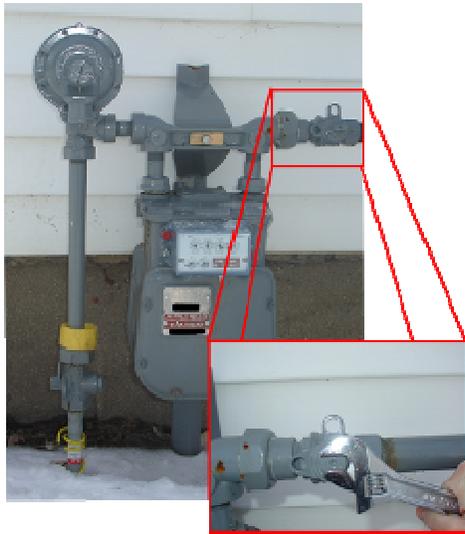
If you suspect gas line damage or smell **any** hint of gas (they add a distinct rotten egg type smell the gas to make it easy to detect leaks) then do the following:

- Open a window to allow the gas to escape (this helps minimize asphyxiation and explosion hazards)
- *Immediately* evacuate the building (you don't want to be in it if it blows up)
- Shut off the gas supply (this prevents further build up of gas)

Do not reenter the building while a smell of gas remains. Call a professional to turn the gas back on – *never attempt to turn it back on yourself.*



To turn the gas off simply turn the valve with instructions for your specific type of gas meter.



## Turning the Gas Back On

*It is not recommended that you practice turning off your gas line (natural gas or propane). Shutting it off will extinguish your pilot lights, which, will need to be relit once the gas is turned back on.*

Video: Shut Off Your Natural Gas Meter @ <http://youtu.be/keNdbAs-sBk>

## Propane

Most rural locations and some suburban areas have **propane** instead of natural gas. Propane is especially dangerous, because, unlike natural gas, it is heavier than air. Natural gas rises and tends to dissipate into the air. *Propane sinks and fills low spaces.* A broken propane line in the basement can fill the basement and suffocate anybody down there. It also increases risk of fire as the flammable gas pools and creates an explosion hazard.

Familiarize yourself and your family with some key information about your home. Each adult member of the household should know where the reset button on the furnace is and the emergency shut off switch. Know how to turn off the main propane line coming into your house. Should your power go out you can restart your furnace by pressing the reset button, but be sure to only press it once when the power comes back on!

For your safety, propane has an odor added so you can detect leaks. You and each person using or handling propane of your household must know the smell of propane. Ask for a scratch 'n sniff brochure or MSDS to demonstrate the odor. If anyone is unable to recognize the odor of propane, call us immediately.

Propane is heavier than air; therefore, leaks will initially settle to floor or ground levels. To check for propane, carefully smell in low spots.

Under some of the following conditions, you may not be able to smell a gas leak. For example:

- Age, colds, allergies, sinus congestion or the use of tobacco, alcohol or drugs may diminish your sense of smell.
- Cooking or other strong odors may cover up the smell of gas.
- In certain circumstances, propane gas may lose its distinctive smell this is called "ODORANT FADE"
- Sometimes propane gas can lose its odor if a leak occurs underground or if there is rust on the inside of the cylinder or piping.

For those reasons, it is recommended that you purchase and install propane and gas detectors according to manufacturer's instructions as a backup warning device. If anyone using or handling propane is unable to recognize the odor of propane, you should not use it until you have purchased and installed gas detector(s).



You need to locate the propane tank and the shutoff valve, which is under the cap on top of the tank. If you have an underground tank, you will only see the cap sticking out of the ground. A wrench is not normally required to shut off a propane supply. Simply turn the shutoff knob (normally clockwise) until it stops. The picture below shows the typical above ground tank and an underground tank cap.



Above ground propane tank shutoff valve example



Below ground propane tank shutoff valve example

## What to do if you smell Propane

- Put out all smoking materials and other open flames.
- DO NOT operate a light switch, telephone, cigarette lighter, appliance or thermostat. Any spark in the area where propane gas is present may ignite the gas.
- Get everyone out of the building immediately.
- Shutoff the gas supply at the tank or cylinder.
- Call your Propane Service Provider - use your neighbor's telephone if gas odor is in the building.
- Have your service person locate and repair the leak, air out the area and check and re-light your gas appliances. Do not return to the building until you are advised that all leaks have been repaired and it is safe to return.

Video: Shut Off Your Propane Gas @ [http://www.youtube.com/user/EMDPrepare#p/u/9/X\\_v6WvPv-Yk](http://www.youtube.com/user/EMDPrepare#p/u/9/X_v6WvPv-Yk)

## Turning the Gas Back On

Shutting off your gas will extinguish your pilot lights, which, will need to be relit once the gas is turned back on. It is for this reason that it is recommended that you contact your gas or propane supply company or your local fire department to turn your gas back on and light all your pilots, as well as check for any leaks.

However, if you re-light the pilots yourself:

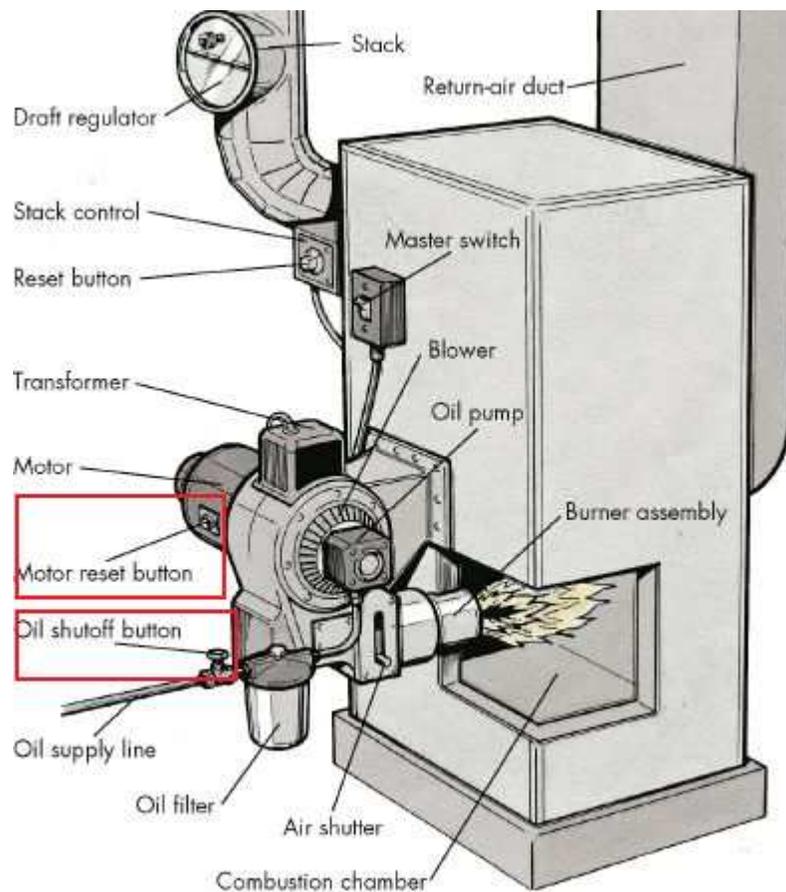
- Turn all appliance controls and manual shut-off valves to the "OFF" position.
- Slowly open the tank shut-off valve.
- Carefully smell for the presence of propane at floor level and in low spots before attempting to re-light the pilots.
- If gas is detected - STOP - See "What To Do If You Smell Gas".
- Follow the manufacturers instructions for pilot lighting. If you cannot find the instructions, do not attempt lighting the pilot.

**IE: Whenever possible - Never attempt to turn the gas back on yourself.**

## Fuel Oil Furnaces

An oil-burning furnace is essentially a blowtorch in a fireproof box. Electrical ignition sparks a high-pressure mist of oil and air, heating the air in an adjacent chamber. A blower pushes the warmth throughout your home. Despite its complexity, problems with an oil-burning furnace are rare. The good news is that many common problems can be addressed easily by a home owner.

Homeowners who heat with fuel oil should become familiar with the shutoff process for these services. Most systems will have a shutoff switch of some sort, but systems will vary. *"For LP or oil, the shutoff is usually at the bottom of the tank or somewhere between the tank and the water heater,"* says York. A call to the supplier is the best way to clear up any confusion.



### Emergency Shut-down Switch

The emergency shut down switch for the oil furnace is usually found somewhat remote to the unit allowing a homeowner, service person or emergency responder to shut down the unit without coming in close proximity to the unit. If the furnace is in a basement, a common location to find this switch is on the wall by the stairs to the basement. You may find the emergency shut off switch on the door to the furnace room.

### How to Prime an Oil Furnace

#### Step 1 – Be sure the furnace is off or Turn Off the Furnace

It is very crucial for you to turn off your furnace. You can simply flip the switch button off. The most important thing is that there should be no electricity flowing into your furnace. Check the emergency shut off switch. Make sure that the switch is turned on. You will find the emergency shut off switch near your building code, usually at the thermostat. Make sure that the thermostat is set at the temperature that you want for your home.

#### Step 2 - Locate the Bleeder Valve

You need to locate the bleeder valve in your oil furnace. The bleeder valve is situated in the oil feed pipe. The oil feed pipe connects your oil tank to your oil furnace. In order for you to find out where your bleeder valve is, you simply have to follow the copper pipe that goes out of your oil tank and then attaches to the oil furnace. Through the pipe, you will find a spigot pipe attachment that has a lever which is set on a right angle to the attachment. That is the bleeder valve. Place a glass jar under the valve.

#### Step 3 - Turn the Bleeder Valve On

Before you turn on the bleeder valve, it is imperative that a glass jar is underneath it or else you will be making a mess. To open the bleeder valve, twist the lever so that it is parallel to the pipe attachment. A closed bleeder valve will form a 90 degree angle with the pipe attachment.

#### Step 4 - Turn the Furnace On

Turn your oil furnace on. You will notice that oil is flowing out of the bleeder valve. The glass jar should be able to catch all of the oil that is expelled from the valve. The entire mechanism is called priming. Should oil sputter everywhere, attach a rubber hose to the bleeder valve and keep the hose secured with the use of a hose clamp. Place the other end of the hose to the glass jar. Simply remove the hose when you are done with the priming procedure.



#### How to Fire Up Oil Furnaces

##### Step 1 – Be sure there is enough oil or fill Furnace with Oil

Fill the tank of the furnace with heating oil or have a delivery service do it for you.

##### Step 2 - Press 'Reset' Button

Try using the 'Reset' button to restart the furnace. Many furnaces have a button that enables the furnace to bleed oil from the tank and causes the furnace to restart itself. If this works, you are finished. If not, then continue to Step 3.

##### Step 3 - Shut off the Furnace

Look for a toggle switch on the furnace that is used to switch the power on and off. The reset function may keep the light indicator from being on. However, make sure to still flip the switch to the 'Off' position (just to be safe).

##### Step 4 - Attach Tubing to Bleeder Valve

Find the bleeder valve on the side of the fuel pump. The furnace's fuel pump is usually located on the left side of the burner. The bleeder valve is usually attached to a copper line and has a hex nut about 3/8 inches in size. Use the crescent wrench to loosen the nut and then attach piece of flexible tubing to the bleeder valve. The tubing should be long enough to extend to the bucket or container. Tighten the valve slightly. If you hear a gurgling sound from the tubing, this is normal as air is simply moving through the valve and hose.

##### Step 5 - Bleed the System

After your flexible hose is in position, turn the furnace on. Then, completely open the bleeder valve. Once the valve is open, you should notice that fuel, oil and air are discharged from the tube into the bucket or container. Allow the furnace to run for at least 10 seconds or until no more oil or debris is discharged from the tube. If the

process does not begin when you turn on the power switch, you may have to use the 'Reset' button to initiate the bleed process.

### Step 6 - Restart the Furnace

Re-tighten the bleeder valve hand tight. The furnace should then be able to be restarted (or it may even start by itself after a few seconds on some models). You may have to repeat Step 6 a few times before the furnace will restart. You may have to wait up to 45 seconds to 1 minute in between attempts to give the 'Reset' function enough time to cycle properly. After the furnace has restarted, make sure to further tighten the bleeder valve so that it is airtight.

For some great step-by-step (with pictures) instruction on restarting an oil furnace see <http://www.wikihow.com/Restart-a-Furnace-After-Running-out-of-Oil>

## How to Turn Off Your Water Supply

Water pipes can burst due to any number of disasters including earthquakes, tornados, hurricanes, and fires. They also routinely break from corrosion, freezing, and accidents such as my friend experienced.



Broken water pipes can cause flooding, which causes further property damage. They can also create drowning hazards in basements and other low-lying areas. To turn off your water supply you will need to locate your water shutoff valve and make sure it works.



Main water shutoff valve on pipe exiting a basement wall

## Municipal (City) Water Shutoff

If you have **city water** finding the shutoff can be a challenge at times. In some houses (normally ones with basements), there is an easily accessible valve where the main water pipe enters the building. You can simply turn off the valve to stop the water flow.

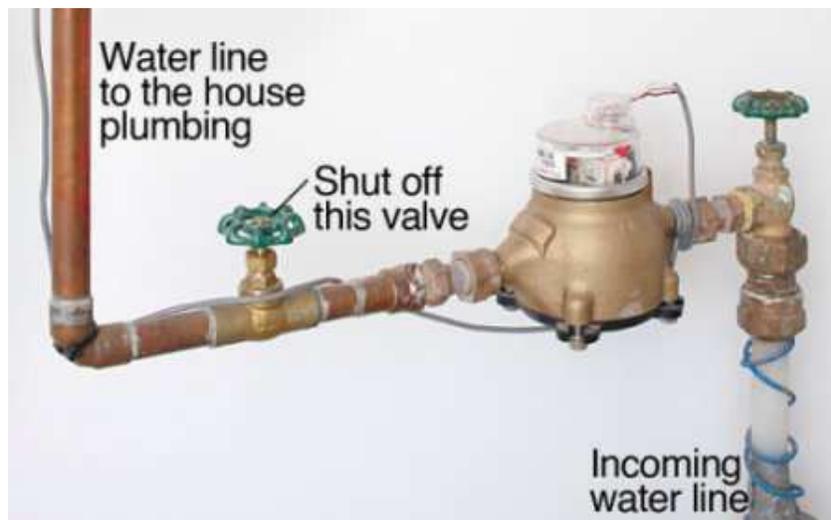
However, not all houses have such a valve. In that case, you will need to find the water meter valve located underground near where the water main runs by your house. It is normally located under a heavy iron cover near the curb.



In some locals it takes a special tool (a five-sided "pentagon" socket) to remove the cover (this is to prevent tampering with the water meter). Apparently, however, there are two common sizes of these bolts. A friend of mine discovered this after he purchased a combination shutoff tool that claimed to turn the five-sided bolt. The tool did, in fact, have a pentagon socket, but it was much too large for the bolt on my water meter cover.

If you have a pentagon bolt on your meter cover, measure it before you buy a tool. If it is **1"** across (measured from a flat side to the opposite tip), then the Orbit Emergency Tool will fit the bolt. If it measures **13/16"** (like my friends did) then you will have to purchase a 13/16" pentagon socket that attaches to a normal 1/2" drive ratchet or a penta wrench (<http://www.jharlen.com/speedsphw1.html>).

In an emergency, you may be able to use a pair of pliers to turn this special bolt. However, some bolts are recessed so you can't easily get a pair of pliers on them. In this case it is doubly important that you have the correct tool to open the cover.



Some covers have a special "key hole" that require a water meter box key to remove. (The Orbit Emergency Tool also contains this key.)

Other covers just lift off, perhaps after a twist.



Water meter cover with a pentagon (5-sided) security nut

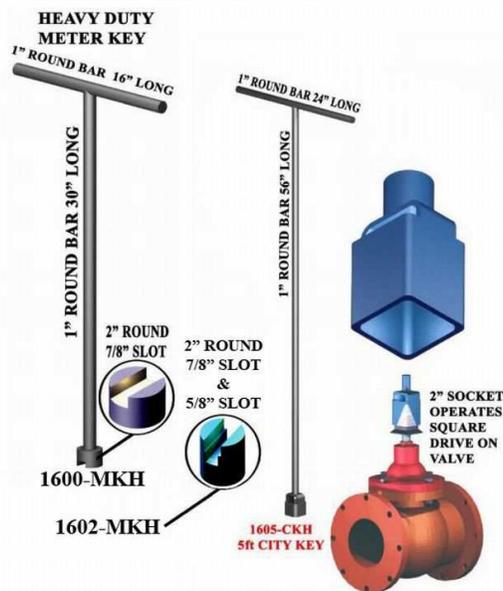


Water meter cover - twist and lift off



"Hand-turn" water meter shutoff valve.

Under the cover, you may need another special tool to shut off the valve if there is not enough room to use an adjustable wrench in the hole. You can get a water valve tool at most hardware stores or online (again, the Orbit Emergency Tool should be able to turn most common valves).



In some locations (normally cold ones where the frost line is deep), the actual water valve is up to 5 feet underground. In this case a long shaft water shutoff tool or key is required.

Some underground valves do have a standard knob – but don't count on turning it by hand if it has not been moved in many years.



5 Point Black Penta Sockets - 1/2"dr 5pt penta socket



13/16" pentagon socket that attaches to a normal 1/2" drive ratchet

It is best to exercise the main shutoff valve periodically by turning it at least partially off and then back on to prevent it from freezing up due to corrosion and becoming very difficult to turn. If the valve cannot be moved at all or does not shut off the water completely it needs to be replaced. *Do that now before you need to use it in an emergency!*

### How to shut off your water in an emergency:

- Look for the shutoff valve outside if you live in a **warm climate**. It will typically be located where the water pipe enters the house Find the water meter and you'll locate the main shutoff nearby.
- Find your shutoff valve in the basement in **cold climates** - it may be set into a wall or on the water pipe leading to the water heater.
- Locate the shutoff valves on either side of the pressure tank if your water comes from a ground well. Turn off both valves.
- Shut off the water by turning the valve clockwise until it won't turn any more.

### If you need to find the City supply shut off valve.

Search along your front boundary line for a plastic or metal cover. It's usually approximately 12"-24" out from your fence line or curb.

### To open the box:

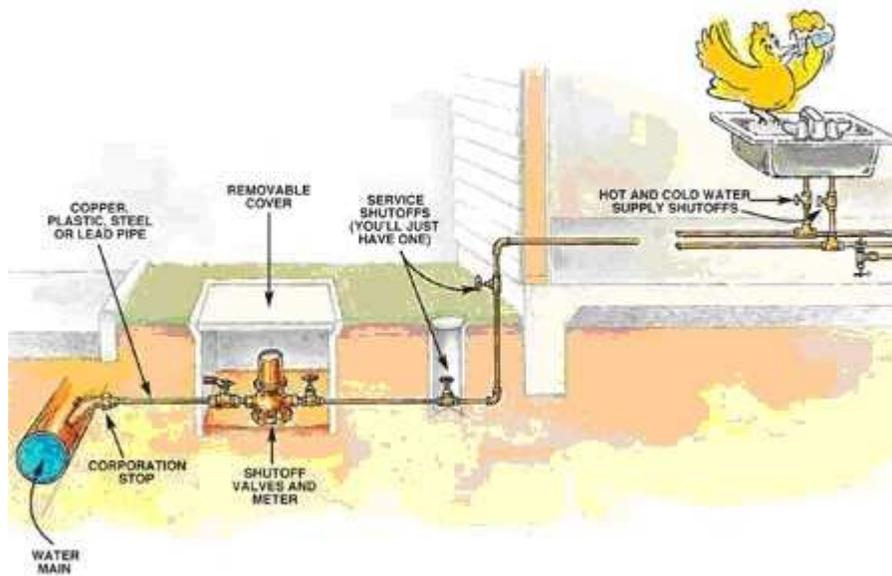
- **Round lid:** You need to insert a screw driver and turn the lid (while jiggling up and down) It will come free when its lugs line up with gaps.
- **Square or rectangle lid:** Insert screw driver slot at one end and pry open.
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Once you have the lid off you may now see a different type of tap top, but the principle will be the same.

- Turn clockwise until firm.
- Check to see if water has stopped running (front hose tap is the best.)

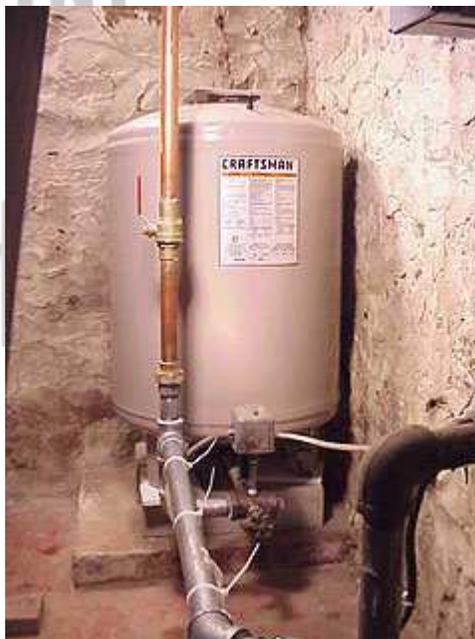
Tip: If shut off valve has not been off for some time, you may have to open and close a few times to free up tap thread.

Video: Turn Off Residential Water @ <http://www.youtube.com/user/EMDPrepare#p/u/15/TNgAAi3hbA0>



### Well Water Shutoff

Most rural locations have **well water**. To turn it off simply shut off the switch or circuit breaker to the well pump. As the pressure tank will still have some water in it you will need to shut off the water valve after the pressure tank.



If a house has a well, there will probably be a pressure tank near the point where the water line enters the house. In my area, the pressure tank is usually located in the basement or crawl space, but I've seen houses with shallow crawl spaces where the tank was located on the main floor.



The most important thing to do is simply turn off the power to the pump by turning off the circuit breaker.

Most well pumps have 240 volt motors, so the power will be controlled by a 2-pole breaker, which is twice as wide as ordinary breakers.

Sometimes there will be a separate disconnect box near the pressure tank. This is a small metal box with a handle and markings that say ON and OFF. This switch can be turned off instead of the breaker, if desired.

An older house can have two separate fuses to control the power to the well pump. In most areas this is no longer up to current code.

Some systems may have a ball valve just downstream from the pressure tank. The water enters the tank (through that silver-colored pipe at the bottom-right of the photo), the vertical copper pipe leads to the rest of the house.

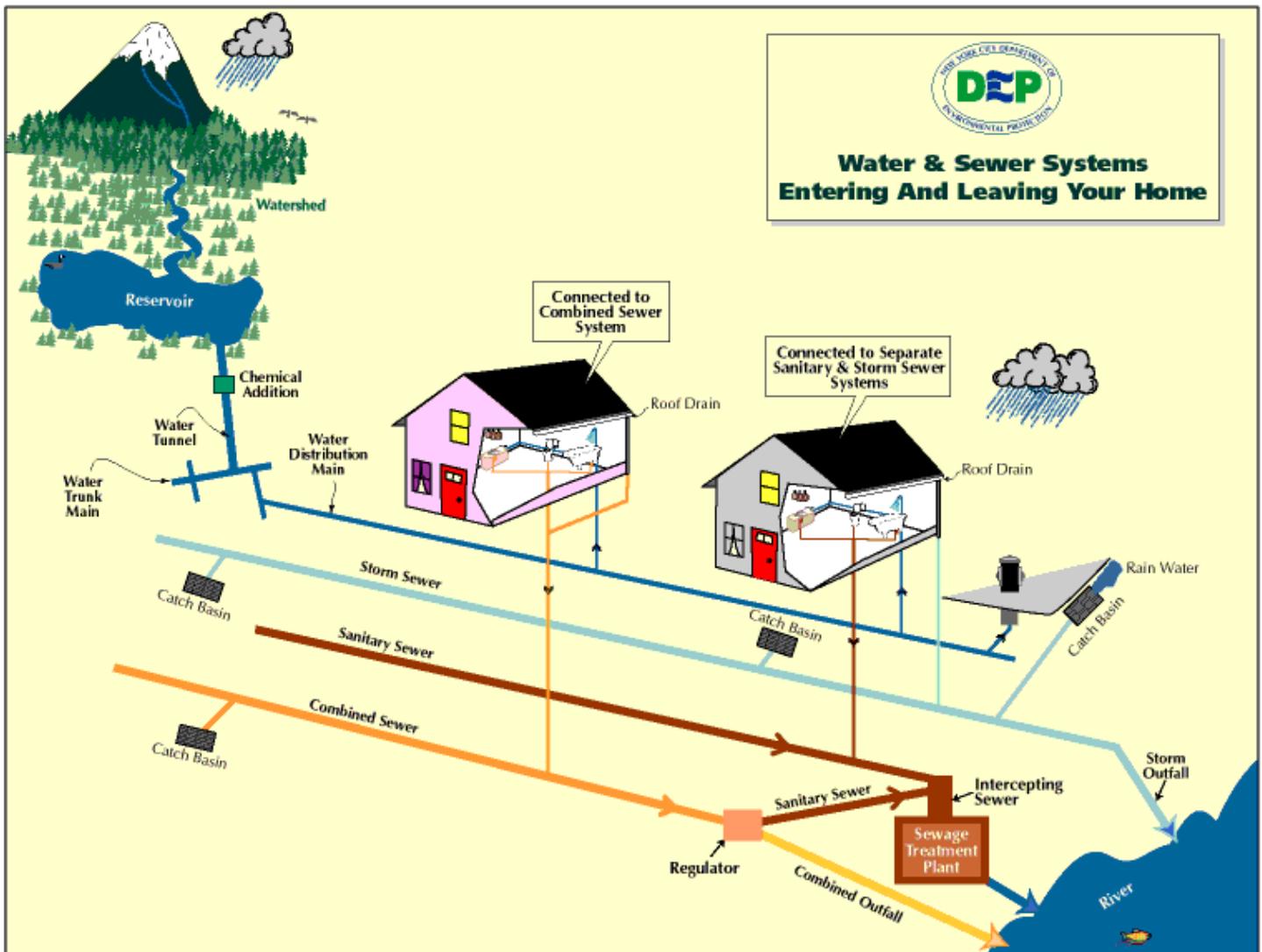


Instead of turning off the breaker, you can just shut off this ball valve. However, if a leak developed between this point and the pipe entering the basement from the well, there would still be a flooding problem.

If a well system is shut off by turning off the power to the pump, the entire contents of the pressure tank could spill into the house if a leak occurred. This tank held 36 gallons.

If the system is shut off by closing the main valve, and leak develops in the main system, then only the volume of water inside the pipes will spill out. That could be a couple of gallons.

Perhaps the best approach is to shut off both the power and the main valve.



## How to Plug Your Sewer Line

A back flowing sewer can cause considerable property damage and health hazards. However, stopping your sewer is not as simple as turning a valve.

(complements of <http://www.disaster-survival-guide.com/plug-sewer.html>)

You may need to plug your sewer line during a disaster as a back flowing sewer can cause considerable property damage and pose health hazards.

In floods and other disasters that affect the sewage pumping stations you may save your basement or house from backed up sewage by plugging your sewer line. However, stopping the sewer is rather tricky since there isn't simply a valve you can turn off.

**Back-flowing** means that liquid is actively flowing backwards up out of the drain. **Backed up** simply means that nothing is flowing out the drain (and thus everything trying to go down the sewer from your house is flowing back out the lowest drain in your house).

The down side to doing this is, well, your sewage does not flow OUT of the house either! You will want to shut off the water supply to prevent anybody from flushing or running the tap while the sewer is plugged.

## Purchase a Sewer Test Plug

You will need to prepare for this procedure ahead of time. Purchase an inflatable sewer line "test plug" that matches the size of your main sewer pipe (commonly 4 inches, at least in most of the USA). You can check the local hardware store, but you will probably need to go to a plumbing supply store or find one online. Make sure you have a hand operated pump designed to inflate the plug.



Inflatable sewer test plug

One online source for plumber's test plugs if you can't find one locally is Petersen Resources (<http://webstore.petersenresources.com/5.aspx>). Look for the single diameter models without bypass ports for your size of pipe (they are cheaper than the multi-sized or bypass models). These use a standard bicycle tire pump to inflate.

## Find Main Cleanout

To plug the sewer you need to find the main cleanout going out of your house. Make sure there are no drains *after* the cleanout or you will need to plug those too. (One friend has a floor drain in my basement that is after his main cleanout, so, he needs a 4-in plug for his main drain plus a 1.5-in plug for his floor drain.)



Main sewer cleanout in a house with a basement  
*The top of the test plug should be below the blue line*

## Plugging Procedure

- Notify the entire house that you will be plugging the drain and explain the ramifications of such as procedure.
- Verify that the water supply is off so you don't run water down the soon to be plugged drain.
- Remove the cleanout cap using large wrench or pair of pliers.
- Tie a rope to the sewer plug bracket so you can later retrieve the plug from the pipe.
- Insert the plug *past* the connecting pipes toward the direction the liquid normally flows.
- Inflate the plug with a bicycle tire pump.
- Repeat for any other drains after the main cleanout.

That should stop the flow. But, as mentioned, *it stops it both ways*. You will need to come up with an alternative to using the toilet to go to the bathroom. Tape the lid shut on the toilet in case somebody forgets that it doesn't work anymore.

## Septic Systems

Although somewhat rare, **septic systems** can also backflow if the septic drain field floods and certain other conditions are right. More common than backflow would simply be the septic system backing up, as new waste has nowhere to go because the drain field is flooded.

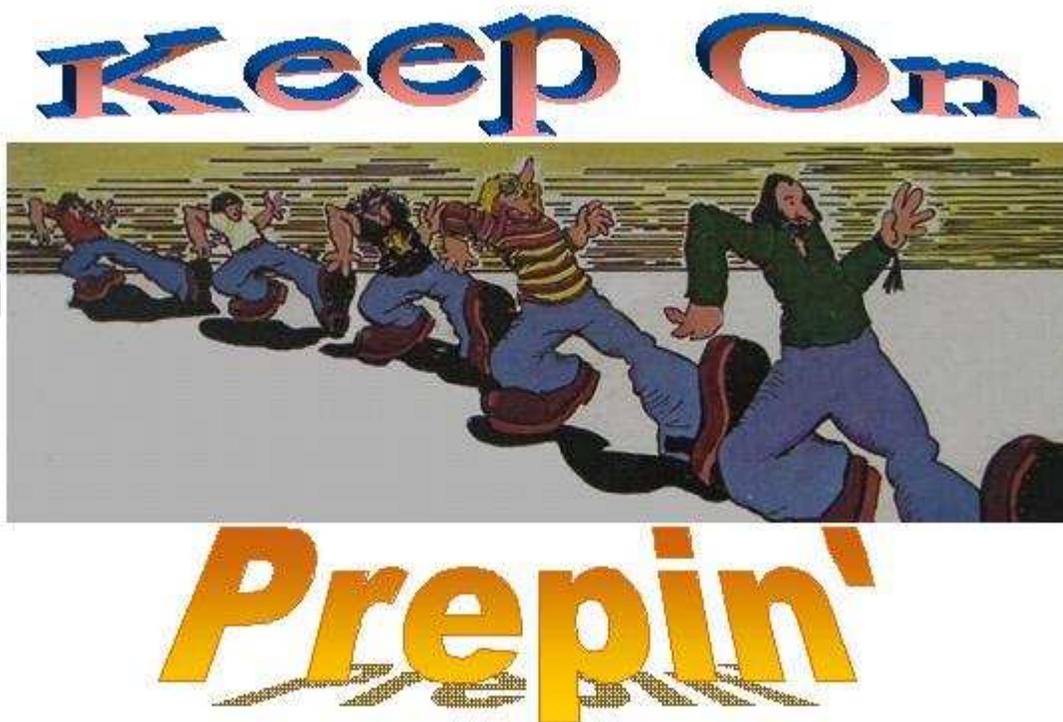
The solution here would simple be to quit flushing and running water down the drain until the drain field is no longer saturated. (Try turning your water off to help accomplish this.)

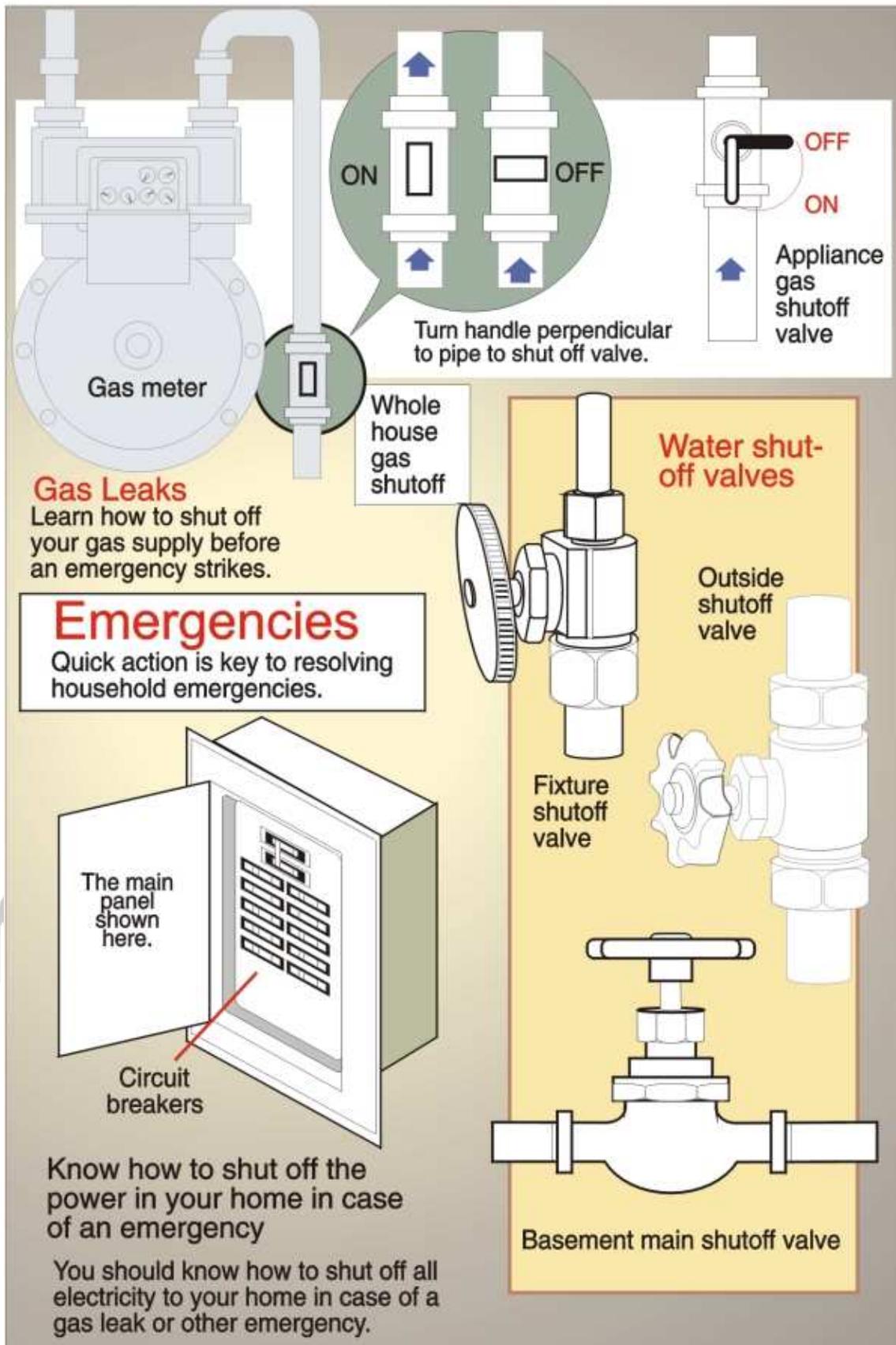
If your septic was back flowing you could use the same plugging procedure as for municipal sewers.

Ok there you have it.

Remember if the crisis gives you 'fair warning' it is always best to shut-off your utilities BEFORE it strikes so you can reduce the chances of some issue occurring while in the middle of the crisis event. Then when the crisis passes and things settle down, you can turn utilities back on. Just remember that with natural gas and or propane, it is far safer to call your provider to do this so that they can relight all your pilot lights and check for leaks.

**TNT**





AP/Stan Kohler