HOW-TO BOOKLET #3410
WATER CONSERVATION

TOOL & MATERIAL CHECKLIST

- ❑ Water Restrictor
- ❑ Wrench
- ❑ Pliers
- ❑ Water Heater Insulation Kit
- ❑ Faucet Aerator
- ❑ Water-Saving Shower Head
- ❑ Plastic Quart Bottle
- ❑ Pipe Joint Compound or Plastic Tape
- ❑ Food Coloring
- ❑ Pipe Wrench

Read This Entire How-To Booklet for Specific Tools and Materials Not Noted in the Basics Listed Above.

Chances are that unless local authorities have asked you to cut down on water use during periods of drought, you probably don't realize how important it is to use water wisely. Flowing freely from the tap, water seems an endlessly reliable and convenient resource. The fact is, Americans are using more water every day, and experts predict that by the twenty-first century, the demand for water will double. Keep in mind that in some areas of our country, there are already water shortages today.

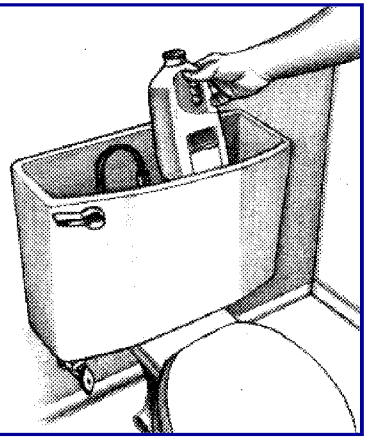
Most households use far more water than they actually need for comfort. In the course of a single day a family of four consumes an average of well over 300 gallons of water. Through a combination of water saving devices and improved usage habits a family could save 100 gallons or more per day. The amount conserved adds up to thousands of gallons a year, and the savings in water, sewage and energy bills can be considerable. Therefore, it's very important that we learn to conserve water now in order to avoid severe shortages in the future.

By reducing water consumption you also save:

- Money on water bills, and reduce sewer and septic system costs.
- Energy by using less hot water, you reduce gas, oil or electricity consumption.
- The environment, by easing the burden on water purification, treatment, and storage facilities.

Fig. 1

Install a water-saving displacement device such as a plastic jug.



GUIDELINES FOR SAVING WATER

- Economize. Too much water goes down the drain needlessly. Use water wisely and look for ways to use less water whenever possible.
- Install water-saving devices. There are many devices you can buy inexpensively at your home center to reduce water flow and consumption.

- Keep the plumbing in top condition. Check faucets, hoses, pipes, and all connections for leaks.
- Reuse water. Water used for washing dishes, house cleaning chores, pool water, etc., may often be used for other purposes. During periods of severe drought, reusing water may be required by local emergency regulations. Reusing water is a good everyday practice, drought or not.

Fortunately, without making drastic changes in your daily routine, you can make the switch to using water wisely. Saving water is easy and inexpensive, once you know how. Here are the areas where you can economize most on water usage in your home.

TOILETS

Toilets use water wastefully. A conventional toilet uses 4-6 gallons of water per flush. There are ways for you to cut the amount of water used. Simply place water-filled plastic bottles inside the tank to displace some water. Use as large a plastic jug as possible that doesn't interfere with the toilet's flushing action. Usually quart milk containers are the right size. This procedure can save you 10 or more gallons of water per day. Don't use a brick—it may disintegrate and hinder normal operation of the flush tank **(Fig. 1)**.

Water-Saving Toilets. If you are buying new toilets, water-saving models are a good investment. New low-flow toilets are designed to use no more than 1.6 gallons per flush. In addition, specially designed low-flush models are available that save even more water by using different flushing processes. There are two types currently on the market. One type uses 1 to 2 1/2 gallons per flush, sprayed in powerful jets from around the rim to clean the steep-sided bowl. The flushing time is only 7 seconds as compared to 20 to 30 seconds for conventional models. Ultra low-flush toilets use only 1/2 gallon or less per flush but require an air compressor to operate. Water-saving toilets cost more than conventional models, but the reduced water bills will more than pay back the extra cost. In fact, several states have passed laws requiring that all new toilets must be of the low-flow type.

Check the Toilet For Leaks. Start by adding about a dozen drops of food coloring to the tank. If any color appears in the toilet bowl after 15 minutes, you need to check the flush valve ball (the rubber stopper that releases water from the tank to the bowl). It may be misaligned and won't properly seal the opening, or the rim of the opening to the tank may be corroded, which could also produce a poor seal.

If there is no dye in the toilet bowl, you need to check other parts of the toilet for leaks. You can start by checking the overflow tube in the tank. If too much water flows into the tank, it spills out unused. To correct this problem, gently bend the float arm until the tank fills about a half an inch below the top of the overflow tube. Be careful not to bend the float arm too much or water will not fill the tank and there will be a poor flush.

There may be a leak at the bolts holding the tank to the toilet. Try tightening these bolts with a standard slot screwdriver from inside the tank and a wrench from the outside. The bolts have rubber washers. Do not apply too much pressure. If tightening doesn't stop the leak, turn off the water supply, remove the tank, install new washers, and then re-assemble the unit. Check all water connections **(Fig. 2)**.

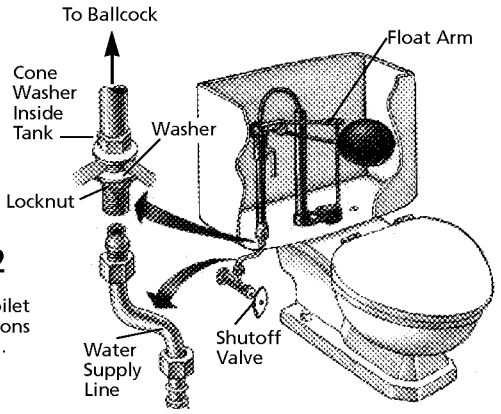


Fig. 2

Check toilet connections for leaks.

If excess water is entering the tank—and bending the float arm doesn't correct the problem—a faulty shut-off valve in the ballcock assembly could be the cause. Solutions to other toilet problems can be found in How-To Booklets #3009 and #3010.

SHOWERS

One of the simplest ways to conserve water is to reduce the amount of water flow from shower heads. A conventional shower head may use from 3 to 10 gallons of water per minute (gpm), depending on water pressure and the type of head. Those long, luxurious showers may be more expensive than you think. Low-flow shower heads are now available that reduce water flow to only 2 1/2 gpm and provide a sharp, forceful spray. They are easy to install **(Fig. 3)**, inexpensive, and can be purchased at home centers. In most homes, a low-flow shower head will pay for itself in water and energy savings within a couple of months.

Flow restrictor discs, which are inserted into any shower head you presently have, are a cheaper option but tend to make the shower dribble instead of spray **(Fig. 4)**.

People normally use less water when showering than when bathing. The average shower requires about 10 gallons of water whereas the average bath requires about twice that much. Water can be further saved by taking shorter showers and by

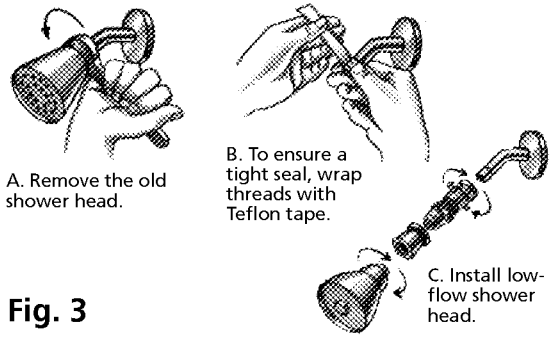


Fig. 3

Steps to installing a low-flow shower head.

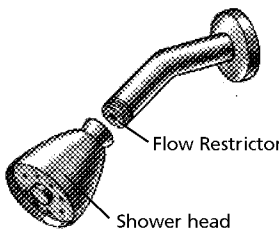


Fig. 4

Use a flow restrictor on shower head.

turning off the shower while shampooing and soaping. If you must bathe, be sure your stopper or drain is tightly sealed or water is literally being wasted right down the drain!

FAUCETS

Faucets are another area where water is wasted. Although newer faucets have a flow rate of 2 1/2 gpm or less, older fixtures have a flow rate of about 3-6 gpm. If you let the water run for five minutes while washing or shaving, about 15 gallons of clean water may be going down the drain. Many people find it difficult to change wasteful habits like this one. An easy way to cut back on waste is to install flow restrictors behind your faucet aerator. If your faucet doesn't have an aerator, then purchase a flow-control aerator **(Fig. 5)**. These can cut the water flow down to about 1/2 to 1 gpm. You can install a flow-control aerator yourself. Ask at your home center to find out if you need an adapter for your particular type of faucet.

A leaking or dripping faucet is a nuisance; wastes water, energy, and money; overworks the water heater; can erode valve seats; and often causes unsightly sink stains. A leaking faucet which leaks 90 drops a minute adds up to about 1000 gallons of water per year. When a faucet leaks or when water oozes from around the faucet body, you must identify what type of faucet you're dealing with, then repair or replace the faulty part. A trip to your home center or hardware store will help identify the type of faucet you have, or you can obtain a copy of How-To Booklet #3011, which describes the types of faucets available and how to repair them.

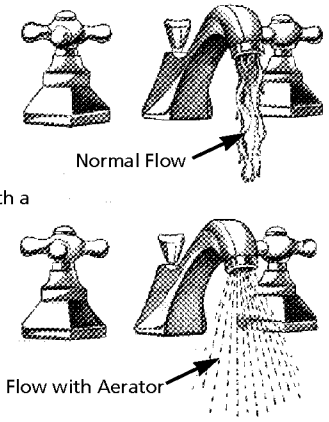


Fig. 5

Water tap with a spray aerator.

APPLIANCES

The best way to cut back on water used by dishwashers and clothes washers is by developing good usage habits. Washing only full loads will save water. You can save hot water by washing clothes in warm or cold water. It takes about 35 gallons of water to do a full wash and rinse, and on the highest temperature setting about 25 of those gallons will be hot water.

If you're planning to buy a new clothes washer, consider a machine that has water conservation features such as load size selector and a variable water level control. Machine with these devices can use up to 40 percent less water than a similar model without these features. A suds-saver option will also save water. Remember that a front-loading washing machine uses 33 percent less water than a top loader.

Washing and rinsing dishes by hand three times a day uses more water than doing one load per day in an automatic dishwasher. On average, washing dishes by hand takes 16 gallons as compared to one load in the dishwasher which uses about 8 to 10 gallons. Operate your dishwasher only when it is filled to capacity—once a day for an average size family. This will save fuel, water, detergent, and money. A quick scrape and rinse under cold water is usually sufficient until the dishwasher is full.

Washer Hoses. Check washer hoses every month or so to make sure that they are not cracked or leaking—especially around connections and where hoses are bent to fit against a laundry room wall. Periodically turn off the water at the faucets, unscrew the hoses, and check the screens in the hoses for sediment from lime in the water. This sediment from the water supply can cause all kinds of trouble, mostly blockage of supply lines. You can clean the screens with a stiff brush, or replace the screens if they are broken, badly worn or bent.

Dishwasher Maintenance. If there is a leak around the door, the leak indicates the need for a new gasket. First try tightening the screw-bolts around the door that holds the gasket in place. If tightening doesn't work, the seal will have to be replaced. This is fairly easy, but the door panel (usually) will have to be removed for the replacement. Be sure to buy a gasket that fits the model and make of your dishwasher. The seal or gasket will be held by retaining screws or clips. Once the screw/clips are removed you may have to pry out the seal.

Once the new gasket is in position, check the fit of the door against the gasket. Adjust the door hinges or springs so the gasket fits snugly around the door opening. Too tight a fit can cause the leaking that you wanted to stop in the first place. Other leaking problems can be caused by a faulty inlet valve, timer, water supply connection, or a water pump.

LEAKING PIPES

Not only does it waste water, a leaking pipe can wreak havoc with your house's structure. Even a tiny leak, left to drip day and night will soon rot away everything in its vicinity. If the leak is not visible, but you suspect one, comparing water meter readings will confirm your suspicions. Read the meter first at night, after the day's water use has ended; and again in the morning before any water is used. If there is a difference between the two readings, you can be sure there's a leak somewhere in the plumbing system.

Find the leak by checking the pipe run, connections, etc. As soon as you spot the leak, shut off the water at the main supply to take pressure off the line. Then locate exactly where the problem lies. Water can run a considerable distance along the outside of a pipe, a floor joist, or the subfloor, so it may take time and a flashlight to find the problem's source.

Any pipe that leaks must be replaced just as soon as possible. There are emergency repair kits for leaky pipes, with the emphasis on emergency. Although the repair may seem to be sound, don't trust it. Patches have a way of peeling.

Stopping Pipe Leaks. If you are dealing with a very small leak such as a pinpoint hole in the pipe, a bit of plastic or Teflon tape may do the trick. Before you apply any tape, turn off the water supply to that pipe or the main valve to the house and use a cloth to dry off the pipe. It should be thoroughly dry for the tape to work. Once the pipe is dry, you can wrap the tape around it in a spiral **(Fig. 6)**. Allow plenty of overlap. Extend the tape several inches beyond the hole on each side. This is a temporary patch that may hold until you have time to do a more thorough job.

At joint connections, the best method of stopping the leak is to pack epoxy, pipe dope, or plumber's joint compound around the fitting **(Fig. 7)**. These fast-setting compounds make a watertight patch.

For larger splits or holes, an automotive radiator or garden hose can provide a temporary patching material. Split a section of hose about 4 inches long. This then slips over the pipe and is held in place with clamps. Commercial pipe clamps are sold in home centers, hardware, and plumbing supply stores. They work well to hold the hose as a temporary repair.

You can use a pipe sleeve device, which is lined with a rubber-like padding. The sleeve goes around the pipe at the point of the leak and is bolted together to form a clamp over the leak **(Fig. 8)**.

As previously stated, all of these repair methods described are only to prevent leakage until you can replace the faulty pipe.

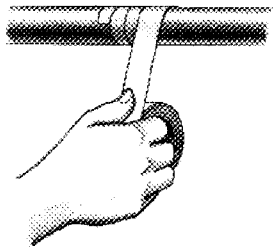
WATER CONSERVATION TIPS

Here are some other ways to reduce water consumption in the home:

- Keep a bottle of drinking water in the refrigerator instead of waiting for tap water to get cold.
- Fill the sink or a cup with a little bit of water to clean toothbrushes and shavers.
- While waiting for tap water to get hot, catch the cold water and save it for watering plants.
- Use a bowl full of water to clean vegetables rather than cleaning them under running water.
- Use only enough water to make steam and avoid sticking when cooking either frozen or fresh vegetables. Don't drown your vegetables! The water will heat faster and you will conserve energy. Reduce cooking to a simmer as soon as the steaming point is reached and use a pan with a tightly fitting cover.
- Save water from cooked vegetables for soup stock (this saves vitamins, too).
- Pre-soak dishes, pots, grills, and oven parts that are encrusted with food.
- Wash the car using a bucket of soapy water and only rinse once with the hose.
- Use a broom to clean pavements of clippings and leaves—using a hose to wash down an average sidewalk and driveway can consume 50 gallons of water or more.
- Use water-saving nozzles on garden hoses. When finished using the hose, shut it off at the house rather than at the nozzle to prevent leaks.
- Use mulch around plants and shrubs to prevent water loss. Also select, if possible, plants that don't require much water.

Fig. 6

Using Teflon tape to stop a small pipe leak.



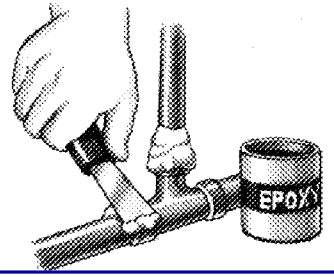


Fig. 7

Leaks at connections can be stopped with plumber's epoxy.

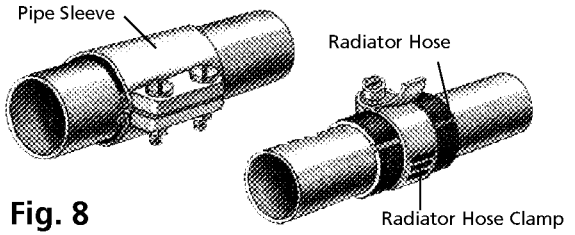


Fig. 8

Two temporary methods of stopping a pipe leak.

- Water the lawn and garden as little as possible and when you do, only water in the early morning or evening hours. Use slow-dripping soaker hoses where feasible.
- With swimming pools, keep water levels low to minimize splashing. Use a pool cover to reduce the amount of water evaporated by the sun.
- Obey local water regulations and restrictions.

The Assistance of Green Seal, Washington, DC; The Healthy House Institute, Bloomington, IN; and Linda Mason Hunter, Healthy Home Designs, Des Moines, IA, is gratefully acknowledged in reviewing the information in this booklet.