GROUNDWATER & YOU

Water is a limited resource.
There are no new supplies.

Clean groundwater is vital
to the existence of
every living thing on earth.

The key to protection is prevention

GROUNDWATER & YOU

FACTS ON PROTECTING YOUR DRINKING WATER

What is HVA?

Founded in 1941, the Housatonic Valley Association is the only citizens' organization committed solely to protecting the entire Housatonic Watershed, from the foothills of the Berkshires in western Massachusetts to Long Island Sound. It accomplishes this goal by promoting a balance between community growth and the preservation of our scenic river valley.

HVA tackles environmental issues reaching into every area of public concern, from the protection of farmland, open space, rivers, and drinking water, to the management of solid and hazardous wastes. HVA's activities have a positive bearing on the quality of life in the Housatonic Watershed. For its achievements, the organization has been recognized and honored at local, state and national levels.

Some of HVA's ongoing projects are —

- **Housatonic RiverBelt Greenway**
  Conserving the Housatonic riverfront's ecology, scenic beauty and community appeal.

- **Stream Teams**
  Inspecting the river and its tributaries with volunteers who record riverbank conditions, land uses, pipe discharges, wetlands, wildlife, dams and pollution; recommend corrective action; and determine where to test water quality.

- **Land Planning/GIS**
  Providing land planning services to towns, land trusts, etc. with state-of-the-art computer-mapping equipment.

- **Watch**
  Helping citizens find positive solutions to environmental issues throughout the watershed especially along the Housatonic River and its tributaries.

- **Environmental Resource Center**
  Providing educational information, publications and programs about the watershed, from wildlife to land use.

- **Watershed Source-to-Sound Cleanup**
  Cleaning up the *entire* length of the river and its tributaries each year with a group of environmentalists, sportsmen, businesses and property owners. In seven years, one million pounds of debris has been removed from the waterways in the Housatonic watershed.

- **Public Policy**
  Testifying at public hearings and before the Connecticut and Massachusetts legislatures.

- **Community Assistance**
  Providing technical support to towns on drinking water, wetland, and other natural resource management issues.

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For more information about HVA and how you an become involved, call:

IN CONNECTICUT
860-672-6678

IN MASSACHUSETTS
413-394-9796

E-Mail: Connecticut: ct@hvatoday.org Massachusetts: ma@hvatoday.org

Visit our Website at http://www.hvatoday.org

FACT SHEET #1

Groundwater Protection: A Job For Everyone

Nearly every day we hear reports in the media of polluted drinking water supplies. Who's to blame? It's not just industry and business that contaminates drinking water. We all have the potential to be the culprit by careless use and disposal of automotive fluids, lawn and garden chemicals, paints, degreasers, common detergents and many other items normally found around the home. Changes in everyday habits can greatly reduce the threat of pollution to drinking water wells. By following a few simple suggestions you can help protect everyone's drinking water.

Simple Ways to Protect Your Drinking Water

RECYCLE
everything! Since underground leaching from landfills can be a serious threat to groundwater, it is important to reduce the amount and types of waste we send to our landfills for disposal. Recycle cans, bottles and glass, paper and newspaper, motor oil and batteries. Compost leaves and other yard waste.

CONSERVE
water. The overuse of water is another type of threat. Fix leaky faucets and install water saving devices on fixtures. Don't let the water run when brushing teeth or shaving, and water the lawn only when necessary and only if there's an adequate water supply.

PARTICIPATE
in your community's Household Hazardous Waste Collection Days which provide for the proper disposal of household and automotive chemical products. Never pour these products down the drain or outside on the ground. They can find their way to surface and groundwater and can get into your own well. These chemicals can pollute your drinking water.

CONSIDER
alternatives to fertilizers and pesticides for lawn and garden care. Mulch grass clippings and leave them on the lawn — they are nature's best fertilizer. Plant specimens which are natural insect repellants, and use organic mulch to control weeds.

CHECK
your septic system to be sure it is working properly. If not, it could be letting impurities enter the ground that can be drawn into water supplies. Pump the system regularly and never pour or flush automotive or household chemicals down the drain. They can kill the bacteria essential to the proper functioning of the system.

TEST
underground home heating oil tanks to detect any leaks. Leaks of this type present a serious threat to groundwater which may be difficult and expensive to cleanup. If your tank needs to be replaced, install the new one above-ground or in a basement. In Connecticut, contact the Department of Environmental Protection, UFST Section, 79 Elm Street, Hartford, CT 06106, or 860-424-3370 for a list of approved tank testers.

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FACT SHEET #2

Water Conservation: A Job For Everyone

Many people are surprised to learn that the amount of water on the earth today is the same as when the earth was formed. There are never any "new" supplies. Water is constantly recycled through the hydrologic or water cycle. Heat evaporates surface water to the atmosphere, and plant life gives off water vapor through transpiration. Eventually, condensation of this vapor forms clouds which return the water to the earth as rain and snow.

Suggestions for Reducing Water Consumption

- Find and repair leaks. A leak can waste as much as 700 gallons a year.
- Choose water saving models for washing machines, dishwashers and toilets. *Laundry — 35 gallons
- Don't let water run continuously when brushing teeth, shaving, washing dishes or thawing frozen food under running water. *Bathroom sink — 8 gallons
- Install water saving devices (aerators, flow restrictors). *Utility sink — 5 gallons
- Flush toilet only when necessary, and don't use it as a depository for cigarette butts or disposable diapers. *Toilet — 100 gallons
- Take shallow baths or short showers with pressure at low force. *Showers, baths — 80 gallons
- Save cooking water for soup stock (this also has an added nutritional benefit) *Cooking, drinking — 12 gallons
- If you must run water to get it hot or cold, save it for later use to soak pots/pans/dishes or watering gardens. *Dishwashing — 15 gallons

*Average daily water consumption for a family of four.

Water is a limited resource and, once polluted, can be virtually impossible to clean up. According to U.S. Geological Survey data, groundwater, which provides 35 percent of urban water needs and 95 percent of rural needs, is being used faster than it can be replaced in some parts of the country.

Since there is nothing that can take the place of water, what can we do to protect and preserve this important resource?

One thing everyone can do is to practice water conservation. Why is water conservation important? Water is the liquid we all need to live. We rely on it for drinking, cooking, bathing, cleaning, for putting out fires — the list is endless. Is water conservation something to be considered only during the hot, dry summertime drought conditions?

Unfortunately, not for people who have on-site water, or wells. Many of us don't know whether our water is of good quality or if the supply is sufficient. How many loads of laundry could you do back-to-back? How many hours (or minutes) could you run your hose without running your well dry? How many other wells are tapped into the same underground water supply as you are?

The amount of underground water is limited, especially during years of less than average rainfall, and must now be shared by more houses than it was years ago. Most of us have learned to be careful not to waste water. The more water we use, the more water we may put into our septic systems. This could interfere with the proper functioning of the system or even cause it to fail. Finally, saving water can also reduce energy consumption and save you money.

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FACT SHEET #3

Garden & Lawn Care: A Source of Pollution

Spring's arrival poses threats to lawns and gardens — dandelions, crabgrass, aphids, slugs and grubs. To combat these weeds and insects, we use "chemical warfare" — herbicides to kill weeds, insecticides and fungicides to control destructive garden pests, and chemical fertilizers to make lawns thicker and greener. But too often label instructions are ignored and too much is applied in the belief that more is better. Many of these products contain hazardous chemicals that can permeate the soil and contaminate groundwater and our wells.

How can we eliminate hazardous chemicals and still have nice lawns and productive gardens? Here are a few suggestions.

Lawn Care

- Mow grass to a height of two to three inches. This helps to shade the roots, retain moisture and allows the root system to become stronger and develop more top growth.
- If your water supply is plentiful, water the lawn once a week, early in the morning or evening to minimize evaporation, giving it one inch of water. Alternate the sprinkler cycle (five to 15 minutes on and one hour off, then repeat) to increase absorption and minimize runoff.
- Mulch grass clippings and leave them on the lawn; they are nature's best fertilizer.
- Choose grasses that are best suited to soil type and expected use. Fineleaf Fescue is good for many types of southern New England soils.

Weed Control for Lawns

- The best way to remove weeds is to hand pull them, especially in early spring.
- In large areas, cover with black plastic for seven to 10 days, remove dead weeds, prepare the soil and reseed or put down sod.
- A teaspoon or less of salt in the center of a crabgrass plant will kill it.

Garden Weeds and Insects

- Pull weeds as soon as they emerge, especially in early morning or after a rain when the soil is soft and damp.
- Remove and destroy diseased or insect-infested plants. Do not put into a compost pile or turn back into the soil.
- Use mulch (organic: compost or wood chips; inorganic: stones or gravel). Two inches or more around plants helps retain moisture and prevents weeds from taking root.
- Practice companion planting. Some plants help repel insects naturally. These include nasturtium, tansy, dahlia, marigold, aster, cosmos, garlic, chive, rosemary, savory, petunia and thyme. Mix these herb and flower plants with vegetable plants. They'll control insects naturally and decorate your vegetable garden.
- Rotate crops and mix plant varieties. Insects are more attracted to groups containing the same kind of plants, and diseases are more likely to occur if plants are always grown in the same place. If, after trying these alternatives, you find that chemical treatment is necessary, use the following techniques:
- Purchase the appropriate chemical and only in the quantity needed to correct the problem.
- Follow directions carefully and apply only the amounts recommended.
- Do not apply lawn or garden chemicals when heavy rain is expected.
- Follow the manufacturer's directions for storing and disposing of unused chemicals.
- Do not mix or dispose of chemicals near a well.

For more information on alternatives to chemical fertilizers, herbicides and pesticides, check your local library or contact your local Cooperative Extension Service office.

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FACT SHEET #4

Septic Systems: A Source of Pollution

The average person seldom wonders what happens to the wastes they flush away or dispose of down the drain. It's a case of "out-of-sight, out-of mind." But if your home has an on-site septic system, the value of your property and the quality of your drinking water can be adversely affected by poor waste-disposal practices. In Massachusetts, you must comply with Title V requirements before you can sell your house. In Connecticut, the Department of Environmental Protection estimates that 15,000 septic systems in the state fail annually, requiring expensive repairs.

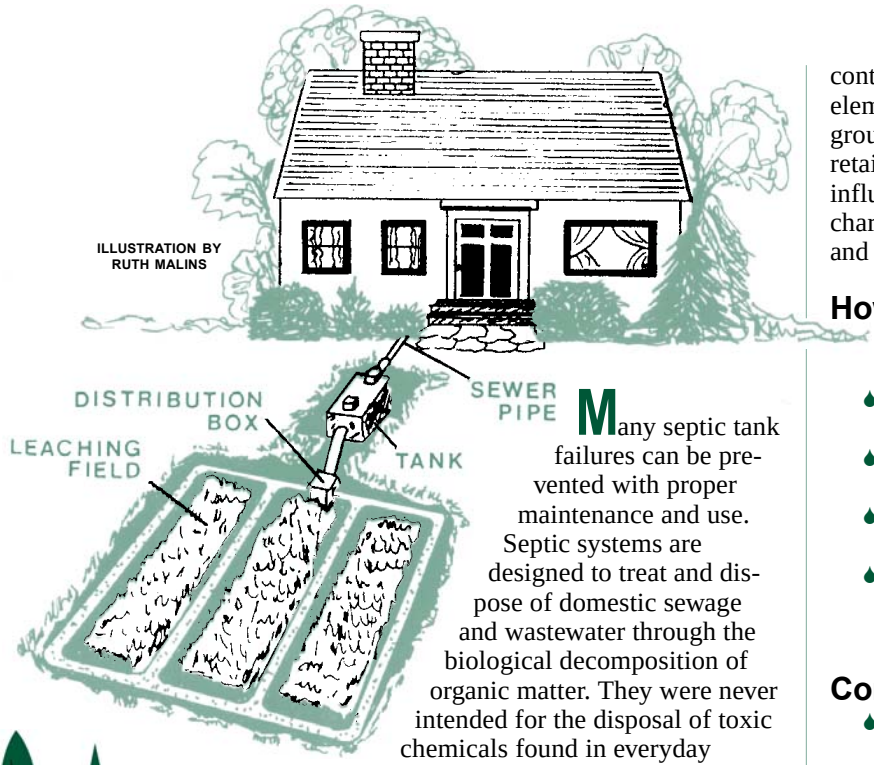

ILLUSTRATION BY RUTH MALINS

Many septic tank failures can be prevented with proper maintenance and use. Septic systems are designed to treat and dispose of domestic sewage and wastewater through the biological decomposition of organic matter. They were never intended for the disposal of toxic chemicals found in everyday household products such as paint, thinners, oils, degreasers, cleaning fluids and solvents. In fact, these chemicals can kill the bacteria essential to the proper functioning of a septic system causing it to fail and eventually pollute your well.

Organic material in septic tank effluent is broken down in the soil, which also removes fine particles, bacteria, pathogens (disease-causing agents) and nutrients. Groundwater contamination can occur when hazardous elements in the septic system effluent enter the groundwater without being adequately treated or retained by the soil. Septic system design is influenced by many factors such as soil characteristics, depth to the water table, slope, and soil percolation rate.

How A Septic System Works

The four major components of a septic system are:

- The *sewer pipe* which carries the wastes from the home to the septic tank;
- The *septic tank* where the solid wastes settle and organic matter is digested by bacteria;
- The *distribution box* which distributes liquids through the leaching system;
- The *leaching field(s),* a series of trenches, pits or beds, into which septic tank liquids are discharged to filter through the soil.

Common causes of failure

- Lack of regular inspections and cleaning of the tank;
- Poor soil conditions or improper design or installation;
- Improper use of the system.

Possible signs of failure include surface water in the leaching area, lush growth of grass, odor, and wastewater draining slowly, or even backing up into plumbing fixtures.

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Failing septic systems can pollute drinking water

A septic tank and leaching field will usually work as designed until the sludge fills more than 40 percent of the volume of the tank and scum fills the available air space in the tank.

Clogging is often the result of the excess buildup of solids (scum and sludge). Eventually these solids will be discharged to the leaching field and will interfere with the system's ability to drain liquid discharges properly.

The layer of solids should be measured each year to determine when the tank should be cleaned. A tank generally needs to be pumped when the layer of scum or solids collecting on the surface of the wastewater is less than three inches away from the bottom of the tank outlet, or "baffle," or the layer of heavy solids collecting on the bottom of the tank is within 18 inches of the outlet fitting.

How to Minimize Septic System Problems

DON'T

. . . use a garbage disposal or pour grease and fats into the system. They can congeal and cause clogging.

. . . do all your laundry at one time or use large amounts of soaps, detergents, bleaches or cleaning fluids. Use only recommended amounts of laundry products and space out water use.

. . . discharge salt brine solution from water softening systems into a septic system. It can damage leaching fields. In Connecticut and Massachusetts, it's against the law, but not in New York State.

. . . plant trees or shrubs over the leaching fields. Roots can obstruct the system.

. . . use matches or an open flame to inspect the tank. The gases produced by decomposing sewage may explode and cause injury.

. . . pour household hazardous materials, like paint, thinners, and cleaning solvents down the drain. They can inhibit the biological process.

. . . drive vehicles over the tank or leaching fields. The tank and piping can be damaged or crushed.

. . . use septic tank cleaners. They retard the natural bacteria process.

. . . flush paper towels, diapers or other heavy materials down the drain. They can clog the leaching fields.

DO

. . . install a filter on the outlet to extend the life of the septic tank. Filters are available from any cleaning contractor or tank manufacturer.

. . . check with your local health department to learn more about Title V in Massachusetts.

. . . keep accurate records of the location, and on the cleaning, of your septic system.

. . . check for faucet and toilet leaks which can waste 700 gallons of water per year.

. . . practice water conservation and use water-saving fixtures and devices.

. . . inspect and clean the tank on a regular basis. Cleaning frequency is based upon the size of the household. Check with your town sanitarian, health department or cleaning contractor for guidance.

PHOTO COURTESY OF
NORTHWEST CORNER SEPTIC SYSTEMS

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FACT SHEET #5

Underground Tanks: A Source of Pollution

Heating your home with oil requires that you have a fuel storage tank. It makes good sense to know where your tank is located, what it is made of, how old it is and whether it was ever tested for leaks. If you don't monitor your tank to ensure it is operating effectively, you may be jeopardizing the quality of your drinking water supply or even those of your neighbors.

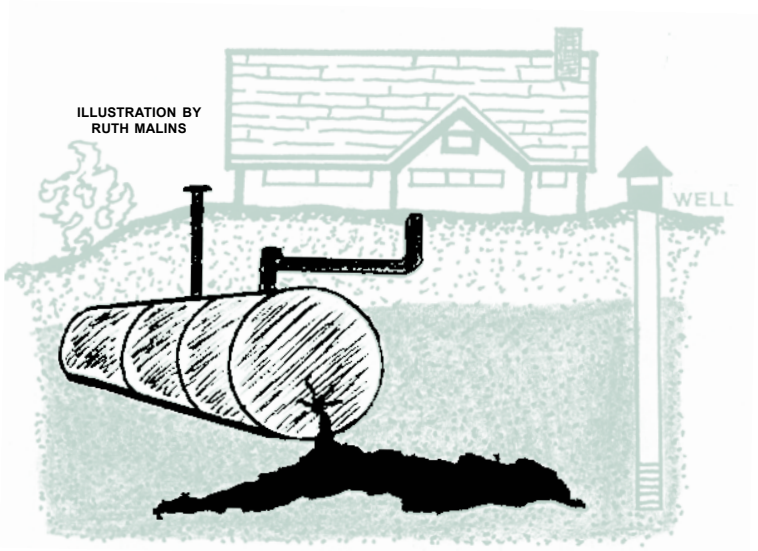

ILLUSTRATION BY RUTH MALINS

Leaks from fuel tanks installed in visible locations such as basements, garages or outdoors are readily noticeable. Leaks from underground tanks and buried fuel oil lines can go undetected for a long time and may only be suspected by the presence of oil or petroleum odors in a water supply, petroleum odor in a basement or soil, or an unexplained loss of product. Oil can be toxic if ingested.

Almost all tank and piping failures are caused by corrosion. Corrosion is the weakening of metal by a chemical action that will eventually cause cracks or holes to develop in the tank or piping.

Corrosion resistant tanks, tanks with "cathodic protection" (systems that protect metal tanks against corrosion), double-walled steel tanks and fiberglass tanks lessen the threats but do not eliminate the potential for leakage. For example, fiberglass tanks do not have the structural integrity of steel, and improper installation, or excessive pressure due to shifting rock or moving groundwater, may cause them to crack.

What should I do if I have an existing underground tank?

First, determine the location of the tank. Check with your fuel oil dealer, the building department, or use a metal detector to locate the tank and piping. If you have an older home, check for abandoned tanks on the property. Next, determine how long the tank has been in the ground. The building department, health office, fuel oil supplier or even your neighbors may be able to help you with this.

Finally, check the tank for leaks. If you have determined that your tank is more than 15 years old, or is leaking, replace it, preferably with a basement or above-ground tank.

How can I properly dispose of my old underground tank?

Old underground storage tanks may be disposed of in two ways, either by removal from the ground or abandoning in place, following procedures recommended in the National Fire Protection Association publication number 30 appendix (NFPA 30). Be sure to check with the local fire marshal for guidance. Find out if your town has regulations that govern tank disposal, or if you need a permit.

Tank removal is not a job for do-it-yourselfers!

If you've decided that your tank needs to be removed, the following checklist may help.

- Contact your local fire marshal for guidance and ask about local requirements.

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- Make sure the contractor is experienced in tank removal and informed on procedures.
- Ask the contractor for references, and check them out.
- Make sure any agreement with the contractor clearly states who will be responsible for having the tank cleaned, having the waste removed (by a licensed waste hauler, if required) and disposing of the tank. If your town permits a tank to be abandoned in place, it must be emptied of all liquid and all sludge must be removed. All piping and vent lines must be disconnected. The tank should be cleaned and then filled with an inert, solid material, such as sand. This will prevent future collapse of the ground above the tank. All remaining underground piping should be capped.

What should I know about new underground tanks?

If, for safety reasons, you need to install a new tank underground, use only corrosion-resistant, fiberglass or double-walled steel and have the tank installed to the manufacturer's specifications. It is advisable to install tanks with built-in leak-detection monitoring equipment. Provide for overfill protection and for sleeving of all buried fuel lines to contain any leakage and facilitate piping repairs.

What should I know about above-ground tanks?

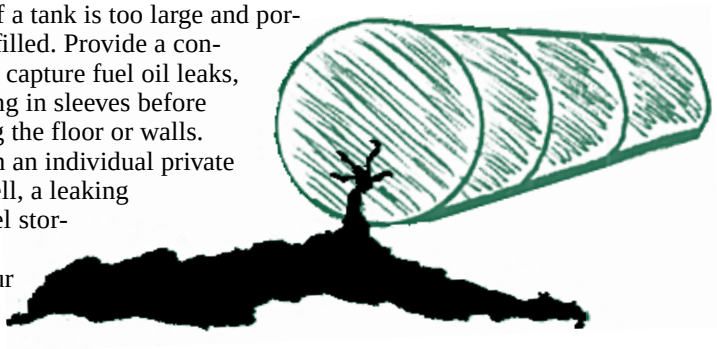
First, carefully estimate the tank size you'll need. Newer heating equipment is more efficient and new buildings are better insulated.

Ask the building official or fire marshal for the maximum size permitted for above-ground or basement storage. Internal corrosion is more likely to occur if a tank is too large and portions remain unfilled. Provide a containment area to capture fuel oil leaks, and encase piping in sleeves before cementing along the floor or walls.

If you rely on an individual private water supply well, a leaking underground fuel storage tank could contaminate your well.

CLEANUP REIMBURSEMENT

Check with your state Department of Environmental Protection to see if the state has an amnesty program for tank removal that may provide reimbursement for cleanup costs.



Testing Underground Storage Tanks for Oil Leaks

Testing methods range from your fuel oil supplier's monitoring of degree-day usage and inexpensive do-if-yourself product measurement tests, to precision tank tightness tests. Be aware that any testing procedure only determines leakage at the time of testing. Before conducting any testing, check with your heating oil supplier or local fire marshal for guidance.

Oil Measurement Test

This test can be done during the months when the heating equipment is not in use. It cannot be done if you rely on an oil-fired hot water heater which is always in use. You need to have a fill pipe or separate gauge opening directly over the tank and a dipstick marked at 1/4" to 1/8" intervals. The dipstick is lowered to the bottom of the tank, being careful not to damage the tank bottom. Record the level of fuel (the top of the wet area on the dipstick) each day. If losses are recorded, it may indicate a leak. Gains could signify that the tank has a hole which is allowing groundwater to enter it. In either case, a more comprehensive test, such as a tank tightness test, will accurately determine the problem.

Soil Vapor Analysis Test

This test is designed to detect the presence of chemical properties from heating fuels that may have leaked into the soil from an underground fuel tank. Several small test wells are installed in the ground surrounding the tank. Samples are taken from these wells and analyzed with a portable gas chromatograph. This test may be available from local health departments. It must be conducted by someone trained to use the equipment and interpret the results.

Tank-Tightness Test

This is the most accurate method for detecting leaks in home heating oil tanks. It can be costly and requires that the tank be completely full of oil before testing. Tanks are pressure-tested, taking into account changes in thermal expansion and contraction of the oil, changes in tank-end deflection, and volume changes caused by the testing procedures themselves. The Connecticut Department of Environmental Protection, 79 Elm Street, Hartford, CT 06106, publishes a list of approved tank testers.

Causes of Corrosion Leaks in Fuel Tanks

Incompatible metals for the tank, fittings and piping.

Excessive moisture in the soil.

Soil composition and acidity.

Condensation in the unfilled section of the tank.

Electrical resistivity of the soil.

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FACT SHEET #6

Private Wells: A Resource at Risk

Most of us assume that because our water looks clean, it's safe to drink. Because of stringent state testing requirements, people who derive their drinking water from a public water utility or a community water system can be assured that their water meets the established standards for purity and potability. If your water comes from your own backyard well, however, it is your responsibility to monitor the quality of your water.

Check the Safety of Your Water

First, get to know your water.

- Does it look clear, cloudy or discolored?
- Are any particles floating in it?
- Does it leave a film on the glass?
- Does it smell oily or offensive?
- Does it taste sweet, salty, metallic or have an aftertaste?

Second, look at nearby land uses for activities that could pose a threat to your drinking water.

- Are there commercial or industrial facilities close by that may be using or disposing of potentially hazardous materials?
- Are there septic systems, underground storage tanks for home heating oil or gasoline, or abandoned or active waste disposal sites in your area?

Finally, preserve the quality of your drinking water by following these tips:

- If you have a septic tank, don't dispose of toxic or hazardous household and automotive products down the drain. They may cause your septic system to malfunction and eventually pollute your well.
- Keep your septic system in good working order by pumping it on a regular basis.
- Make sure that your underground home heating oil tank is not leaking.
- If you must use fertilizers and pesticides, apply and dispose of them only according to the manufacturer's recommendations.

Most state laws require testing of private wells only at the time of installation. In some cases, a town health regulation or a lending agency may require water quality testing at the time a property is sold or transferred. Routine testing of private wells is not legally required, but it is the only way to be sure your water is safe.

Clean drinking water is essential to the health and well-being of all living things. All well water is drawn from groundwater supplies. Under normal conditions, groundwater is suitable for direct human consumption, but it can be degraded by human activity. Every community in Massachusetts and Connecticut has experienced well contamination, affecting hundreds of thousands of people. The most prevalent causes of contamination are from pesticides, nitrates, solvents, landfill leachate, gas, oil, and road salt.

Contact your local health director

While it's possible to test for every potential contaminant, it's very expensive and probably unnecessary. Your health director is aware of water problems in your area and will help you determine the type of water testing you need. The director will also be able to provide you with a list of state-certified laboratories that test water.

Even if you have no reason to believe there's anything wrong with your water supply, regular testing will alert you to changes in water quality. This information could be invaluable if you ever need to prove that your water has been polluted by some activity outside of your property. Your family's health and well-being is well worth investing the time and expense to reassure yourself that your water supply is safe to drink.

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Testing Private Water Supplies

When? What kind? How often?

For routine testing a "standard test" is recommended, which measures bacteriological, physical and chemical properties of water. The cost ranges from $65 to $75.

Standard testing is recommended once every five years if you are not near high-risk land uses or major development construction, and your initial test indicates no pollution problems. However, if you have a shallow well or spring, you should test annually for coliform bacteria* and nitrates.

*The U.S Environmental Protection Agency recommends testing all wells every year for coliform bacteria.

STANDARD TEST COMPONENTS

BACTERIOLOGICAL

Coliform Bacteria
One of the more common pollution problems in private wells is bacterial contamination. All water contains some bacteria, many of which are beneficial. Coliform bacteria, derived from human and animal excrement, can enter private water supplies from surface water runoff, animal waste sites, or septic system effluent. While coliform bacteria itself may not pose a substantial health risk, its presence usually indicates that more dangerous bacteria may exist, such as those causing typhoid fever, dysentery, hepatitis or diarrhea. Drinking water should contain no coliform bacteria.

PHYSICAL

pH – Acidity
The degree of water's acidity or its basicity is described in terms of a pH number. A pH of 7 is neutral; below 7 is considered acidic and above 7 is basic. Drinking water can range from 6.4 to 8.5 pH. Acidic water can cause corrosion which can permit dissolved metals from piping to enter drinking water supplies, stain fixtures, and pose potential health risks.

Conductivity
(as total dissolved solids or TDS) Hardness, chlorides, sodium and sulphate make up TDS. This test measures the degree of mineralization and corrosiveness of water.

Odor
Unusual odor may be caused by organic matter or inorganic chemicals present in the water.

Turbidity
Turbidity describes the cloudiness of water caused by the suspension of minute particles of sediment. Ground water usually has no turbidity. Turbidity indicates that surface water is infiltrating the well. It does not normally pose a health risk but treatment may be necessary to make the water potable.

Color
Unusual color may be caused by chemicals, organic matter, iron or manganese in the water.

CHEMICAL

Hardness
Hardness is an indication of calcium and magnesium carbonate concentrations in the water supply. Hard water is not harmful to humans but causes scaling in waterlines, hot water heaters and appliances such as washing machines and dishwashers. It also reduces the cleaning action of soaps and detergents.

Chloride & Sodium
Chlorides are present in all potable water supplies. When sodium is also present (from road salt runoff or water softener backwash), water may have a salty taste. High concentrations of chloride may corrode pipes. Elevated levels of sodium may be a health risk to persons with heart, kidney or liver disease.

Detergents
The presence of detergents in water may cause frothing. The concentration of detergents is an indication of the degree of pollution from domestic sources, usually a faulty septic system.

Iron
Natural waters usually contain some amount of dissolved iron. When exposed to the air, iron oxidizes, forming rust-colored particles that can stain fixtures and clothing and cause metallic odors in drinking water. Iron in drinking water can cause the growth of iron bacteria, indicated by a rusty or brownish slime inside toilet tanks or on faucet heads. This can give water an unpleasant odor and taste, and it can clog valves, pipes and appliances.

Copper
When present in elevated levels, copper can cause gastrointestinal problems. Water may have a bitter taste. When water is acidic, copper can leach from piping and leave blue-green stains on fixtures.

Sulfates
Sulfates appear in natural waters. Elevated levels may cause an unpleasant medicinal taste or diarrhea and may impart a "rotten egg" odor.

Manganese
Manganese causes problems similar to those of iron. It can cause dark brown or black stains on laundry or fixtures and can impart an unpleasant, metallic taste.

Nitrate
While some nitrates are found in drinking water due to the natural decomposition of organic matter, high levels of nitrates can indicate a potential health risk, especially to infants. Excessive concentrations of nitrates can cause methemoglobinemia (blue baby syndrome). Nitrates enter drinking water from sewage, animal feedlots, fertilizers and landfills.

Ammonia Nitrogen
A product of the microbiological decay of plant and animal protein, ammonia nitrogen is normally found in groundwater due to natural processes. Elevated levels may indicate domestic pollution from septic systems.

Alkalinity
Alkalinity describes water's ability to neutralize acid. Water which has carbonates, bicarbonates and hydroxides tends to be alkaline, can have a "soda" taste, and can dry the skin.

ILLUSTRATION BY RUTH MALINS

SPECIALIZED TESTS

If you suspect chemicals have contaminated your well water, your local health department or testing laboratory can recommend appropriate analyses. Two of the more common groups are:

Volatile Organic Compounds (VOC)

VOCs will find low levels of gasoline additives, such as MTBE and BETX, fuel oils, strippers and degreasers, such as TCE. These may result from leaking tanks, improper disposal, or commercial and industrial activities nearby. Average cost ranges from $125-$250.

Herbicides and Pesticides

These can be analyzed for the suspected source of contamination. Risk factors include lawn care chemicals, farming operations and pest control in the watershed of your water supply source. Average cost ranges from $100-$500.

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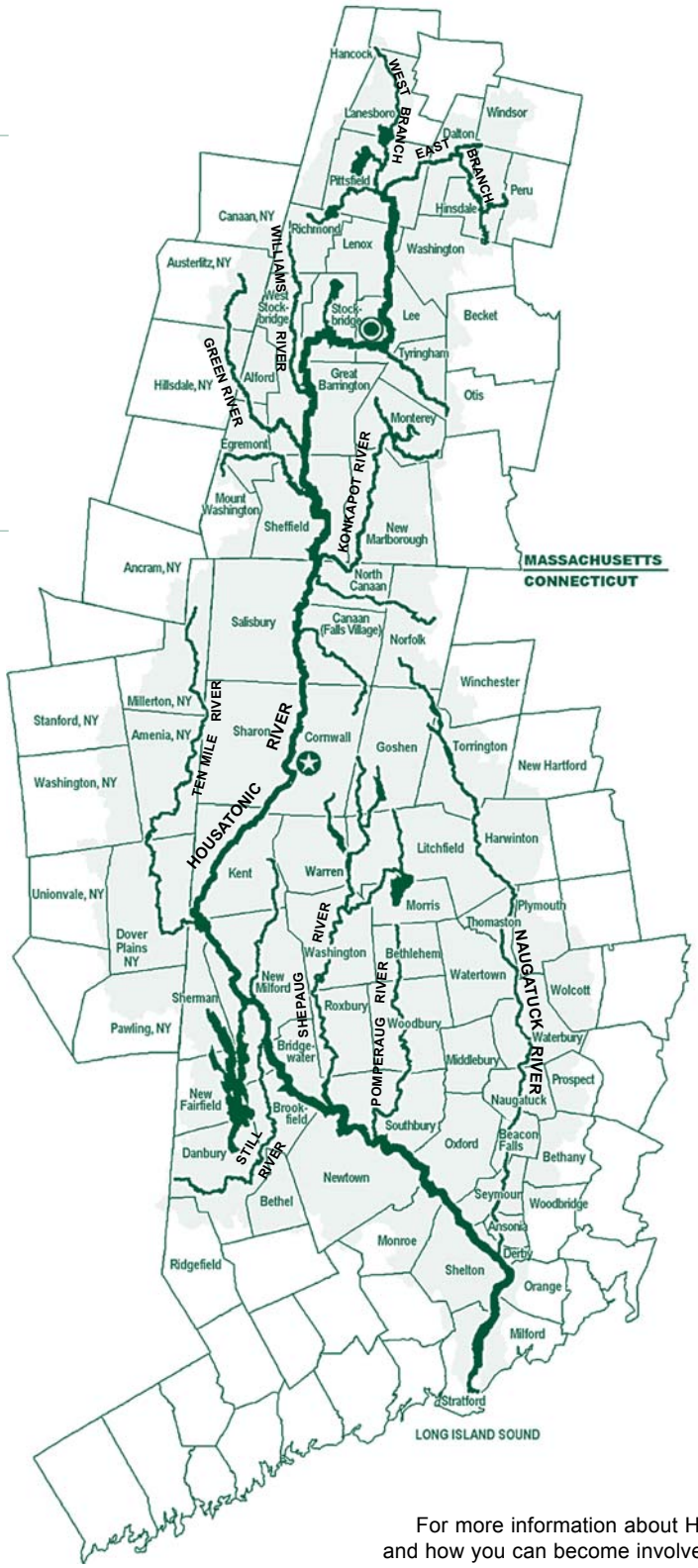
THE HOUSATONIC WATERSHED

The Housatonic River flows 150 miles from its source to the sea. The watershed covers 1,950 square miles, running from the eastern boundary of New York to the ridgeline east of the Naugatuck River, and from the Massachusetts Berkshires north of Pittsfield to Long Island Sound.



For more information about HVA and how you can become involved, call:

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