

# *A Homeowner's Guide to*

NON-POINT  
SOURCE  
WATER  
POLLUTION



in the  
Connecticut River Valley

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Part of the LIVING WITH THE RIVER series

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1994



# NON-POINT SOURCE WATER POLLUTION IN THE CONNECTICUT RIVER VALLEY

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**People in the Valley are increasingly aware that their lifestyle actually affects the health of the Connecticut River, the waters that feed into it, and the waters they use.**

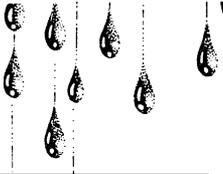
Why? Because rain and snow falling on homes, lawns, and driveways in 35% of New Hampshire and 65% of Vermont eventually find their way into the Connecticut River, carrying our pollution with them. How you treat water and household pollutants may affect the many millions of people who live downstream from you.

The drain and the dump! This is how we typically get rid of things we no longer want. The trouble is that these receptacles are not designed to handle all of our modern wastes. When we depend solely upon them, we expose ourselves, our children, our neighbors, our property, and even our pets to dangerous risks.

**What is non-point source pollution?**

Think of our watershed as a funnel. Everything that goes in to the top of it comes out the bottom. Sediment, nutrients, toxics, septic tank effluent, and other pollutants wash from agricultural fields, pavement, bare slopes, and your home landscape down into streams, lakes, rivers, and groundwater. These are sources of “non-point” pollution. The discharges of wastewater treatment plants and other kinds of water pollution that enter the river at a specific point are called “point” sources.

**Here are some things you can do to protect your property and the Connecticut River Valley from non-point source pollution.**



## MANAGING THE PATH OF WATER

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### Slow it down.

Runoff from stormwater washes loose soil, fertilizers, pesticides, and other pollutants into lakes and streams. When you channel water into vegetated areas and away from storm drains or streams, you help protect the Connecticut and its tributaries, large and small, from siltation and streambank erosion, and loss from your own land.

- watch where water goes on your land during a heavy rainstorm and again during spring snowmelt
- direct downspouts toward flat, well-vegetated areas or into gravel-filled seepage pits, rather than toward paved areas
- keep paved areas to a minimum. Use bricks or blocks set in sand, stepping stones, gravel, wood chips, or other porous material where a hard surface is desired.
- install gravel trenches along driveways and patios to capture water

### Soak it up.

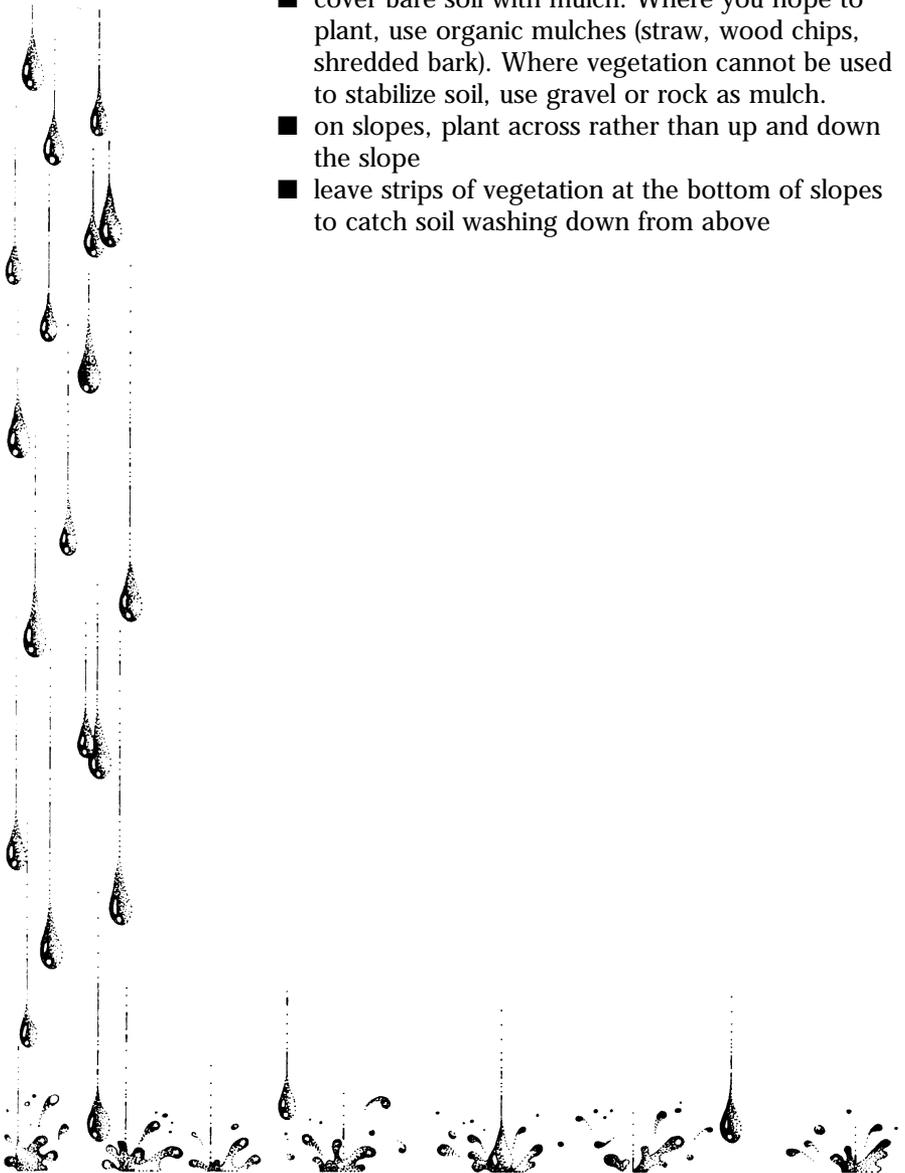
Make your yard a sponge. Trees, shrubs, grass, and ground covers help water soak into the soil, control erosion, remove pollutants, shade and cool the air, and dry out damp areas, to say nothing of making your home a more pleasant place to live and enhancing its value.

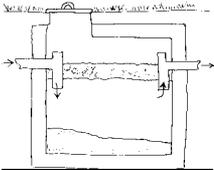
- protect existing trees and other plantings
- consider naturalized landscaping, using native plants which establish easily and need less water and care than exotic plants
- give slopes special protection with vegetation, mulch, turf, or even a rock garden
- keep soil from compacting by tilling, aerating, or planting. Compacted soil will not allow water to soak in.

**Keep your yard out of the Connecticut River: prevent soil erosion.**

You need your soil where it is. It will clog streams and fish gills if allowed to leave.

- limit clearing of land for new construction
- retain native vegetation to keep soil in place until you are ready to replant
- cover bare soil with mulch. Where you hope to plant, use organic mulches (straw, wood chips, shredded bark). Where vegetation cannot be used to stabilize soil, use gravel or rock as mulch.
- on slopes, plant across rather than up and down the slope
- leave strips of vegetation at the bottom of slopes to catch soil washing down from above





## YOUR SEPTIC SYSTEM

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**This is your waste, and you've got to deal with it.**

Everything that goes down the drain, into the toilet, or into the dishwasher and clothes washing machine ultimately goes into the soil or stays in the septic tank until it is pumped out. Deal with it right, by understanding and caring for your septic system, and you can prolong the life of your system and protect water quality. Neglect or abuse it, and you may need expensive repairs and allow harmful bacteria and nutrients to enter soil and water.

**Do you have a proper septic system?**

If your home is not connected to a public sewer system, your sewage remains on site. If your home was built before 1967 it is possible that your "septic system" is little more than a homemade hole in the ground. This presents a very real threat, both to your property value and to the health of your family, pets, and neighbors, to say nothing of water quality.

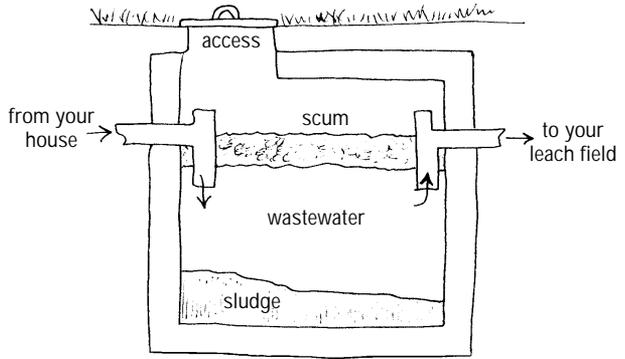
A proper, well-maintained system will adequately treat your sewage. A failed system is unhealthy, illegal, expensive to replace, and a nuisance to your neighborhood and watershed. It may contaminate your property and nearby wells, and jeopardizes surface and ground waters all the way from your home to the Connecticut River. Contamination of lakes, streams, and rivers by inadequate or failing septic systems impairs swimming and ruins habitat for fish and other wildlife.

**How a septic system works**

Since you are solely responsible for maintaining it, you should know how it works. Wastewater enters the tank from your house, and the heavy solids sink to the bottom. Grease, oils, and lighter solids rise to the top, where they form a layer of scum. Bacteria, which are naturally present in materials flushed into the system, decompose the biodegradable waste. Liquids flow out of the tank through a pipe to the leach field, where bacteria, viruses, and some phosphorus are removed. Eventually, the filtered wastewater reaches the water table.

## In the tank

Solids and grease remain in the tank until they are pumped out. If they are allowed to build up enough to enter the pipe leading to the leach field, expensive trouble often occurs.

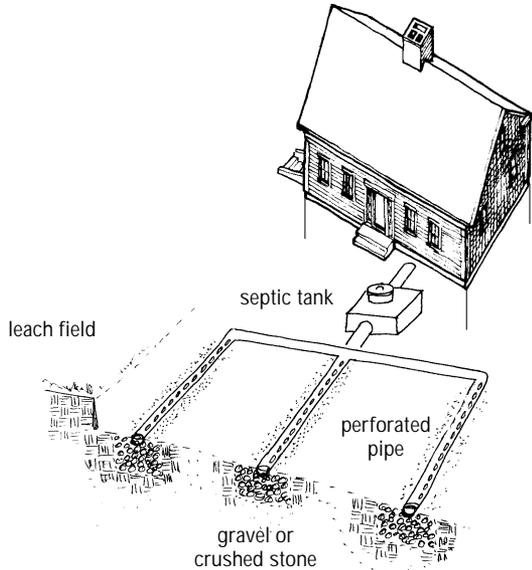


## Keep it running right

- know the location of your tank, clean-out man-hole, and leach field. Make a sketch and post it in the basement where the sewer pipe leaves the house.
- have the tank inspected every 2-3 years to check the level of accumulated sludge. It will have to be pumped out periodically to prevent damage to the leachfield. Keep a record of pumping, inspection, and other maintenance, so you know when to make the next call to a licensed pumper. Give the record to the new owner if you sell your home.
- check for warning signs of system failure: sewage odor, slowly running household drains and toilets, and soggy soil or especially lush, green grass over the leachfield. These indicate that nutrients from your sewage could be on their way to the Connecticut River.
- spread your laundry chores through the week to avoid overloading the system. Take big loads of laundry to the laundromat, especially when your soil is already saturated by heavy rains.
- use only professional, licensed septic contractors
- obtain proper permits before making repairs to your septic system. Check with your town clerk to see what local and state permits must be approved before you begin.
- conserve water

## Protect your septic system area

- keep vehicles and livestock away from the entire system—they can compact soil, crush pipes, and crack the tank, resulting in costly repairs and water pollution
- keep trees or shrubs at least 10' from the leachfield, to prevent clogging by roots
- stack firewood and place storage sheds and other structures such as patios, driveways, and swimming pools away from the tank and leachfield



## Feed your septic system only what it is designed to treat

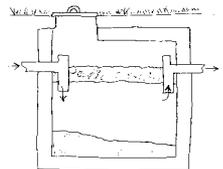
- never pour household chemicals down the drain or toilet; they poison necessary bacteria in the septic tank
- limit use of drain and toilet bowl cleaners and disinfectants for the same reason
- don't pour fats, oils, and other grease down the drain. They will plug your system.
- never flush cigarette butts, disposable diapers, sanitary napkins, tampons, or tampon applicators down the toilet. They decompose slowly, if ever.
- use only white toilet paper, since colored paper does not break down as rapidly in the tank, and the dyes are toxic to septic tank bacteria
- use a drain strainer to catch hairs or food that might clog the drain

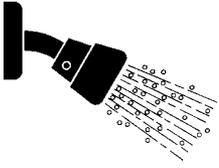
- avoid garbage disposals in the kitchen sink. They not only use a great deal of water, but add solids and grease that may overburden the system and clog a septic pump. Instead, make a compost of your kitchen scraps.
- don't connect a basement sump pump to the household drain and septic system
- make sure roof gutters and downspouts don't drain onto the leachfield
- use no/low phosphate detergents to clean dishes and clothes. Your septic system cannot remove phosphate, which will pass through the soil into surface waters and fertilize aquatic algae and other pest plants. Most liquid detergents are phosphate-free, as are some powders. Check the label before you buy.

### **Avoid septic cleaners and additives**

Chemicals and enzymes are often harmful to your tank and to groundwater. They should not be used even though they are heavily promoted as helpful to septic systems. There are over 1,200 brands of septic system cleaners or additives available on the market. They contain hazardous chemicals that may interfere with the bacteria in your tank, and allow oil and grease to pass through the system to clog up the leach field. The chemicals are resistant to biodegradation, and threaten wells and water quality in the Connecticut River watershed.

Bacterial additives are a waste of your money. Your septic tank already has a sufficient population of bacteria to do the job.





## USING LESS WATER

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Add extra life to your septic system and well pump, and reduce water pollution by cutting down on runoff.

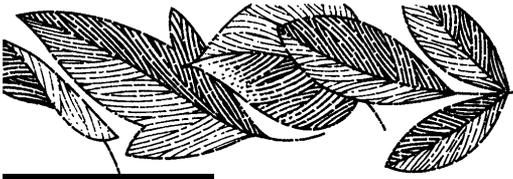
### In your yard

- use drip irrigation directly at plant roots rather than overhead sprinkling to cut irrigation water needs by 30-70%
- if you use overhead sprinklers, place them carefully to keep water from landing on pavement
- water at night or early in the morning to cut down on evaporation
- avoid frequent shallow watering, which encourages shallower roots and a thirstier lawn. Allow 1" of water at each irrigation (set out an empty tuna can to help you measure).
- keep your lawn mowed at 2-4" high to conserve moisture
- mulch gardens and landscaping to retain water and discourage weeds
- turn some of your lawn into a meadow of native wildflowers, which require less water
- use drought-tolerant turf grasses and other plants that require less water—ask your garden center for suggestions
- wash your car in your yard, and only as necessary, using a high-pressure, low volume hose with a pistol grip nozzle. Better yet, use a bucket and sponge.

## In your home

- turn off the water while brushing your teeth, washing your face, or shaving
- take shorter showers and shallower baths. A bath can use 30-50 gallons.
- do not leave the water running while you wash vegetables or dishes in the sink
- wait until you have a full load before running the dishwasher or clothes washer, and use the shortest cycle and lowest water level possible. Permanent press cycles may use an extra 10-20 gallons of water.
- install flow-reducers in sink faucets and showerheads
- install low-flow toilets or water displacement fixtures, such as two half-gallon plastic bottles filled with water, in your toilet tank. This can reduce water use by 20-50%.
- test your toilet tank for leaks by adding food coloring; if color appears in the bowl within 30 minutes without flushing, you have a leak that could waste as much as 200 gallons of water each day.
- repair leaking or worn fixtures and faucets promptly
- keep a bottle of drinking water in the fridge instead of running tap water until it gets cold





## YARD WASTE

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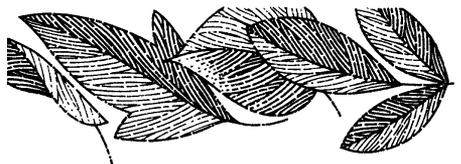
**Keep your yard clean.**

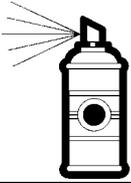
- never pile leaves or other yard waste near a stream bank
- remove grass clippings and leaves from paved areas, where they may wash into storm sewers, decay, and become fertilizers in lakes and streams
- compost or till leaves into the garden
- leave grass clippings on the lawn as fertilizer or use them as mulch

**Pet waste**

Pet waste may be a dangerous source of human and other diseases as well as a potential fertilizer for algae in waterways. People or animals drinking water contaminated by pet waste could ingest harmful pathogens.

- do not put pet waste into storm drains
- do not add pet waste to the compost pile, since even the hottest compost piles do not reach temperatures necessary to kill disease-carrying micro-organisms
- if you live near a lake or stream, bury pet waste at least 100 feet from water
- if you live in an urban area, pick up waste to keep it from washing into waterways or storm drains, and flush it down the toilet or bury it outside 4-6" deep, away from vegetable gardens and areas where children are likely to play or dig.





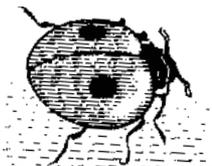
## CHEMICALS: HANDLE WITH CARE

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Expose yourself and your home to chemical fertilizers, pesticides, and other pollution and safety hazards only if there is no acceptable alternative. Whenever you buy a product, you take on a responsibility to use and dispose of it properly. Create one area for mixing, loading, and storage, away from your well. Dispose of any leftovers properly.

**Fertilize your home landscape, not the Connecticut River.**

- test to know what your soil actually needs before you apply extra nutrients
- buy only as much as you need
- select slow-release fertilizers or organic fertilizers like grass clippings, manure, and compost, which release nutrients more slowly and evenly than chemical fertilizers and improve soil texture
- read and follow package directions
- apply at half the strength twice as often, to minimize danger of washing off
- fertilize at the right time of year for your plants, usually as spring growth begins
- never apply fertilizer to frozen ground
- avoid fertilizing on windy days
- water lightly after fertilizing, but...
- don't apply fertilizers or pesticides just before a heavy rain
- avoid paved areas
- store unused fertilizer in a dry place in a plastic bag, or share it with someone who will use it up
- keep your lawn healthy with proper mowing, fertilizing, liming, and watering—if you use a lawn care company, be sure they test your soil and know the location of your well or other sensitive areas of the property
- contact your county Cooperative Extension Service for lawn care recommendations



## BUGS

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**A heavy-hitting chemical pesticide may not be the most effective way of coping, after all.**

A healthy lawn and garden are better able to resist pests and withstand drought, reducing the need for pesticides and overwatering. Integrated Pest Management (IPM) involves carefully identifying your particular pest problem, and choosing the best method or combination of ways to deal with it.

**Try a non-toxic approach first.**

- get rid of old tires or other trash that could harbor breeding pools of pests such as mosquitoes
- plant borders of marigolds, chives, onions, garlic, or basil to repel insects from your vegetable garden
- construct insect barriers such as screens or foil collars around plants
- use pest-resistant flowers, vegetables, and other plants whenever possible
- plant mixed stands of trees or crops instead of planting just one type
- time plantings to avoid peak of insect infestations
- handle minor pest problems by hand-weeding and destroying insects, or dislodging them with a spray of water
- use natural predators, such as ladybugs, praying mantids, lacewings, garter snakes, and toads to eat garden pests. Eggs and larvae are available from better garden suppliers. Encourage these natural predators by protecting their habitats.
- rotate crops so that the same pests do not have a chance to settle in

**Seek less toxic pest control products.**

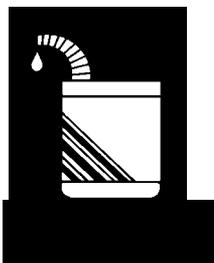
If non-toxic methods aren't enough, diagnose the problem first, then use insecticidal soaps, BT (*Bacillus thuringiensis*) or milky spore (two kinds of natural bacteria), or dormant oil sprays, as appropriate. These are usually available at garden centers.

**Pesticides: a last resort**

Use pesticides only when other methods have failed

- find out what pests you have, and choose the least toxic product available (EPA label says “caution”, rather than “warning” or “danger”)
- buy only the amount you need, and apply the smallest amount needed to do the job
- follow the label exactly, and avoid the temptation to use more than the label directs. Overdosing will not do a better job; it will only cost you more and risk poisoning you or contaminating your water.
- apply pest control at the right time and place in the pest's life cycle, as the label specifies
- apply only on calm, dry days when no rain is forecast for at least 24 hours
- avoid spraying pesticide over sidewalks, gutters, or other paved areas, where it can wash into waterways, or to bare ground or eroded soil
- never apply near wells or waterways





## HOUSEHOLD HAZARDOUS WASTE

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**You wouldn't think of standing by the river and pouring this stuff in.**

Modern technology has brought many new chemicals into the home. Many of these products are familiar ones we use every day. Some may contain ingredients that are poisonous if eaten, breathed, or absorbed through the skin, that corrode other materials, react to make fumes, explode, or can be easily set on fire.

Poisonous materials thrown away in the trash may end up in the air after incineration or in a landfill unequipped to handle them, and eventually may seep into groundwater. Chemicals flushed or poured down a drain may corrode your plumbing, collect and release fumes you later inhale, ruin your septic system, or leach into your well.

It takes only a small amount, handled improperly, to contaminate a well, disrupt the proper function of a septic system, or poison a small child. One gallon of motor oil can contaminate one million gallons of drinking water—a year's supply for fifty people.

**Some commonly used household toxics**

- in the kitchen: oven cleaners, furniture polish, floor wax, drain cleaner, spot remover, metal polish, mothballs, adhesive, batteries, bug killer, cleaning fluid, mouse bait, lamp oil, window cleaner
- in the bathroom: toilet bowl cleaner, nail polish remover, medicine, insect repellent
- in the garage: motor oil, battery acid, gasoline, car wax, antifreeze, rust preventative, fuel additive, brake fluid, lubricant, bug and tar remover, radiator flush, wiper solution, swimming pool chemicals, kerosene, charcoal lighter fluid and self-lighting charcoal, grill polish and cleaner, butane lighter, lye, driveway topping
- in the workshop: oil-based paint, varnish, preservative, paint thinner, stripper, brush cleaner, solvent

### **Avoid collecting toxic materials**

- in the garden: herbicide, pesticide, fungicide, pest strips, fertilizer
- hobby supplies: photographic chemicals, chemistry sets, glue and adhesive
- read the label: know what you are buying and what the dangers are
- choose the least hazardous product. Use non-toxic or “old-fashioned” safe homemade alternatives where possible.
- buy only what you need and use it up instead of storing the leftovers
- avoid aerosol-spray products that contain ozone-damaging chloro-fluorocarbons (most now don’t)

### **Handle household toxics safely in your home**

- read and follow the package directions, which are given for your safety
- heed label warnings such as “do not incinerate”
- never mix toxic products
- use only the recommended amount
- store in the original container so you can refer to the label each time you use the product, and do not forget what it is
- store toxics in a safe place, closed securely, until a safe disposal option exists

### **Safe disposal of household hazardous waste**

- don’t burn it, bury it, or put it in the trash
- do not use the toilet as a hazardous waste dump
- never pour hazardous wastes down the sink, on the ground, or into a storm drain or waterway
- pass unused toxics to someone who will use them up or take them to a household hazardous waste collection program. Contact your town hall.
- paint cans should be allowed to dry out before placing in the trash
- save unwanted household chemicals such as cleaning fluid in their original containers for disposal at a household hazardous waste collection
- recycle used turpentine, brush cleaner, and paint thinner yourself by letting particles settle out. Pour off the chemical and reuse it.
- remove non-lead-based paint with sandpaper or a heat gun instead of chemical stripper
- use less toxic, vegetable oil-based engine cleaners

## Alternatives to toxic household products

- dispose of used motor oil by taking it to your local recycling center if your community accepts it, or call NH DES Waste Management Division for alternative collection centers
- use less toxic, propylene glycol-based antifreeze rather than ethylene glycol-based antifreeze: take used antifreeze to a household hazardous waste collection
- air freshener: sprinkle baking soda on rugs, vacuum afterwards; set vinegar out in open dish
- all-purpose cleaner: mix 1 gallon hot water and 1/4 cup vinegar. This solution is safe for all surfaces and can be rinsed away with water.
- bathroom cleaner: use baking soda to scrub surfaces clean and wipe with solution of 1/4 cup vinegar in 1 gallon of water.
- drain cleaner: use a plunger or metal “snake” to keep drains open. For clogged drains, pour in 1/4 cup baking soda, followed by 1/2 cup vinegar. Close the drain until all the fizzing stops, then flush well with boiling water.
- furniture polish: mix 2 parts vegetable oil and 1 part lemon juice
- lighter fluid: use matches
- metal cleaner:(for brass, copper, pewter) dissolve 1/4 cup salt in a little vinegar, and add flour to make a paste
- mothproofing: store cleaned clothes in garment bags spread with cedar chips
- oven cleaner: dampen spill and sprinkle salt on it while the oven is still warm. Scrape away when cooled. Greasy spots can be removed with a vinegar-soaked rag. For tough spots dampen with water and scrub with baking soda and steel wool.
- low abrasion scouring powder: baking soda
- silver polish: soak silver in 1 quart warm water with 1 teaspoon each of baking soda and salt and a piece of aluminum foil
- stain remover: apply cold seltzer or club soda immediately
- window cleaner: fill empty spray bottle with 3T ammonia, 1T vinegar, and cool water
- use latex paints rather than oil-based products



## GET YOUR COMMUNITY INVOLVED

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Ask your town's selectmen what is being done locally about household hazardous waste. Urge them to cooperate with neighboring towns to hold a regular collection day and help them look into ways to fund this event or otherwise deal with the problem.

- organize a paint swap with your neighbors
- organize a stream clean-up project in your town
- suggest to your local garden club, church or scout group, and service organization that they sponsor a meeting on improving local water quality or learning more about the Connecticut River, and tackle a project to benefit the River or a tributary.
- get involved with local planning and decision-making about river and conservation issues

***What you do every day makes a difference for the Connecticut River and its watershed. And whatever you do to benefit the River will, in the long run, benefit you, your family, and your community.***



# WHERE TO GO FOR HELP

## Vermont

### Soil erosion control—

#### **USDA Soil Conservation Service offices:**

Caledonia and Essex Counties  
26 Main Street  
St. Johnsbury, VT 05819  
748-3885

Randolph (Orange Co. and part of Windsor County)

38 S. Main Street  
Randolph, VT 05060  
728-3371

White River Junction Office  
Junction Marketplace, Suite 17  
White River Junction, VT 05001  
295-1662

Windham County  
Federal Bldg, Room 321  
Brattleboro, VT 05301  
254-5323

### Septic systems, water pollution—

#### **Agency of Natural Resources**

Wastewater Mgmt Div.  
103 S. Main St., Annex  
Waterbury, VT 05671-0405  
241-3822

Pest management, fertilizers, lawn and landscape maintenance, water conservation—

#### **Cooperative Extension Service offices:**

P.O. Box 20  
Agricultural Center  
Guildhall, VT 05905  
676-3900

6 Gilman Office Center  
White River Junction, VT 05001  
296-7630

Old Guilford Road  
RR 6 Box 27-D  
Brattleboro, VT 05301  
257-7967

**Dept. of Agriculture**  
Plant Industry Division  
116 State St., Dr 20  
Montpelier, VT 05620-2901  
828-2431

### Household hazardous waste—

#### **Agency of Natural Resources**

Recycling and Resource Conservation Section  
103 South Main St.  
Waterbury, VT 05676  
(800) 932-7100 (in Vermont)  
244-7831

## New Hampshire

### Soil erosion control—

#### **USDA Soil Conservation Service offices:**

Coos County  
RR2 Box 235  
Lancaster, NH 03584  
788-4651

Grafton County  
P.O. Box 229  
Woodsville, NH 03785  
747-2001

Sullivan County  
25 Mulberry Street  
Claremont, NH 03743  
542-6681

Cheshire County  
U.S. Postal Service Building  
196 Main Street  
Keene, NH 03431  
352-3602

### Septic systems, water pollution—

#### **Dept. of Environmental Services:**

Water Supply and Pollution Control Div.  
Subsurface Systems Bureau  
6 Hazen Drive  
Concord, NH 03301  
271-3503

Pest management, fertilizers, water conservation, lawn and landscape maintenance—

#### **Cooperative Extension Service offices:**

Coos County  
RR2 Box 242  
Lancaster, NH 03584  
788-4961

Grafton County  
County Courthouse  
P.O. Box 191  
Woodsville, NH 03785  
787-6944

Sullivan County  
24 Main Street  
Newport, NH 03773  
863-9200

Cheshire County  
33 West Street  
P.O. Box 798  
Keene, NH 03431  
352-4550

**Dept. of Agriculture**  
10 Ferry St. 4th Floor  
Concord, NH 03301  
271-3551

### Household hazardous waste—

Waste Mgmt Division  
6 Hazen Drive  
P.O. Box 95  
Concord, NH 03301  
271-2900