

BETTER HOMES & GROUNDWATER

A HOMEOWNER'S GUIDE

Originally published by the Stevens Point-Whiting-Plover Wellhead Protection Project.
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Project by the Wisconsin Department of Natural Resources. The practices described in this booklet are
designed for homes and may not be applicable to commercial businesses.
Artwork by Lauren Isbemer, volunteer.

Wisconsin, 1995

Why Read this Booklet?

Many people in Wisconsin are concerned about their drinking water. It's no wonder why:

- A recent study indicated about 50% of the wells that have been sampled have high levels of nitrates (>2 parts per million).
- Almost 11% had detectable levels of pesticides.
- We read each week about incidents of groundwater and drinking water contamination in all regions of the state.

What Can You Do?

Groundwater protection is not just an agricultural or industrial challenge. Homes affect groundwater, too. Many families are already trying to be "groundwater smart" and this booklet offers ideas to help them do the best job possible.

If you haven't thought much about groundwater protection before, start by experimenting with some of the practices in this booklet. Most homeowners find that groundwater protection is not only the right thing to do - it's also easy and economical.

Not Just Groundwater

By using the practices in this book, you'll do more than keep groundwater clean and safe:

- **Streams and lakes:** you'll prevent toxins from contaminating fish and reduce the excessive growth of weeds choking your local lakes.
- **Family safety:** you'll protect your family from accidental poisoning and exposure to hazardous chemicals.
- **Wildlife:** you'll improve habitat for birds and other wildlife.
- **Beautiful homes:** your home will be more attractive, safer and easier to take care of.

Interested? Read this booklet and keep it as a handy reference. Try some of the ideas and call some of the phone numbers for more information. Then have a glass of cool, fresh water and take pride in the fact that you're helping to make better homes and groundwater.

Fertile Ideas.....

.....for Groundwater Safe Yards

Lawn Alternatives: Many homeowners are finding that a beautiful yard is not necessarily dominated by a carpet of grass. Try replacing parts of your lawn with low maintenance groundcovers, shrubs and perennial flowers that require little or no fertilizer and water. Information to help get you started is available: See references.

	Groundcovers	Shrubs	Flowers
Shade	Purpleleaf Wintercreeper Periwinkle Lily of the Valley Bugleweed	Gray Dogwood American Cranberrybush Blackhaw Viburnum Hazelnut*	Columbine* Lilies Skyblue Aster* Shooting Star*
Sun	Birdsfoot Trefoil Bearberry* Wineleaf Cinquefoil* American Bittersweet*	Creeping Juniper Potentilla* Virginia Rose* Winterberry	Butterfly Weed* Lupine* Pasque Flower*

* Wisconsin native.</TD>

Background: Fertilizer usually contains nitrogen, phosphate and potash. Nitrogen is the most important lawn nutrient but it can contaminate groundwater with nitrate. Phosphate can contaminate rivers and ponds, causing excess weed growth. The chloride which is often combined with potassium in potash can contaminate groundwater. The numbers on a fertilizer bag indicate the percentages of these three plant nutrients. For example, a fertilizer labeled 10- 1 -4 contains 10% nitrogen, 1% phosphate and 4% potash.

Fertilizer Type: If you think that your yard is in dire need of fertilizer, follow these steps:

- Have your soil tested by bringing it to your county Extension Office.
- Choose a fertilizer high in Water Insoluble Nitrogen (WIN). WIN is released slowly and helps prevent "lawn bum" and groundwater contamination. WIN fertilizers cost more, but they're worth it.
- If your soil test calls for potash, apply it with your fall fertilization. Use a fertilizer with a high potash content, like 10-5-14. Potash can help winterize your lawn.

Fertilizer Amount: Apply the amount of fertilizer shown in this chart around May 1. Apply the same amount after September 15. By not watering your lawn, you can produce excellent results by applying one-half of the amount of fertilizer shown.

For example (see shaded lines on chart), on a 3,000 square foot lawn and 10- 1-4 fertilizer (10% nitrogen), use 30 lbs of fertilizer in May and 30 lbs after September 15. Remember, don't water and use only 15 lbs each time.

Pounds of Fertilizer to Apply

% Nitrogen in Your Fertilizer*

		5	10	15	20	25	30	45
Lawn Size in Sq. Ft.**	1,000	20	10	7	5	4	3	2
	2,000	40	20	13	10	8	6	4
	3,000	60	30	20	15	12	10	7
	4,000	80	40	27	20	16	13	9
	5,000	100	50	33	25	20	17	11

* % nitrogen is the first number on fertilizer label. For odd numbered fertilizers, simply estimate an amount between the values in the chart.

** Do not include driveway, house, flower beds or other non-lawn areas. Often, the lawn is about half the total lot size.

About Spreaders: Set your spreader at half the setting suggested on the fertilizer bag. Place the amount of fertilizer needed for 1,000 square feet (from our chart) in your spreader. Apply the fertilizer to a 1,000 sq. foot area. If you run out before you finish, decrease the setting; if you have excess fertilizer, increase the setting. Continue to fine tune your spreader as you fertilize your lawn. Use this setting each time you fertilize.

After reading all of this about fertilizers and how to use them and when to use them, you need to remember all of the alternatives to having high-maintenance yards. Natural plantings and gardens can often be less work and provide a more beautiful setting to look at and enjoy.

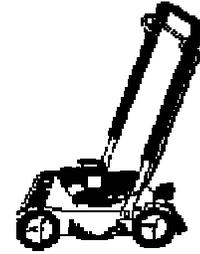
More Fertile Ideas

Watering: If you must water your lawn, consider:

- Water twice each week, but skip a watering if it rains.
- Apply inch of water at a time (use a rain gauge or pan to measure).
- Water early in the morning.
- New lawns need lighter, more frequent watering, 30 minutes at a time. Also be sure to maintain a mulch layer of marsh hay or some other material to minimize erosion, and to hold in soil moisture.

Mowing: Mowing too short stresses the lawn and promotes weed growth by allowing sunlight to reach weed seedlings.

- Set your mower blades at 2.5 inches above the ground.
- Mow your lawn before the grass gets 4 inches tall.
- Leave your clippings on the lawn. They fertilize the soil and do not cause thatch as was once thought.
- Mulcher mowers make shorter clippings that decompose faster and help fertilize the lawn.
- Sharpen your mower blades when dull, at least once each year.</TD>



CAUTION: Mowers can start when the blade is turned. Disconnect the spark plug wire from the spark plug before removing the mower blade.

Weeds: Control weeds by following good mowing, watering and fertilizing practices.

Dandelions: Dig them out. Digging 4 - 5 inches of the root will kill most dandelions. You may have to dig some a second or third time. If you must use chemicals, spray individual dandelions rather than applying a fertilizer/herbicide blend to the entire lawn.

Crabgrass: Keep your lawn tall (at least 2.5 inches) to shade out the crabgrass. Apply crabgrass killer only if you have a noticeable crabgrass problem. Crabgrass is usually not a problem in the shade, so keep your grass at least 2.5 inches tall to shade out the crabgrass. Also, don't apply fertilizer in July and August - this tends to grow crabgrass better than it does lawn.

Dormant Lawns: One option is to give your lawn a rest this summer. Don't fertilize your lawn at all, let the grass grow 3-4 inches tall and don't water. Your lawn will turn brown temporarily, but it will green up again in September when the rains come again. **CAUTION:** for sensitive grass varieties or lawns with weak root systems, this can be fatal. Try this on a small area first to see how it works for your lawn. Also you may want to overseed in a less sensitive grass variety.

Gardens:

- Have your soil tested at your County Extension Office. (1)
- Use compost, well-rotted manure or peat moss to increase organic matter in your soil. Locate your compost pile away from your well. A composting brochure is available. (1) (3)
- Use mulches to reduce water needs and weed growth.
- Plant cereal rye or annual ryegrass in the fall and rototill it down in the spring. This adds organic matter to your soil and the grass roots absorb nitrate in late fall and early spring, keeping it from contaminating groundwater.(2)
- Don't spray just because you see insects eating your plants. Insecticides kill good bugs as well as pests. Identify the problem insect (1). Wait and see if it gets worse - good insects like lady beetles might keep the problem under control. First, pick them off by hand, if you decide you must spray, use a product that says (on the label) that it is approved for your crop and will kill the insect in question. Consider using insecticidal soaps and bacterial sprays like "BT."

If you decide to spray, read and follow all label directions exactly.

For More Information:

- [Your County Extension Office](#)
- [Your Local Gardening Center](#)
- Order "Recycling Publications" from the WDNR, 2421 Darwin Rd, Madison, WI 53704. OR the "Yard Care and the Environment" series from your County Extension office.

Groundwater – Smart Household Cleaners

from A - Z

Some household cleaners, like drain cleaners, are very poisonous (1). Others, like bleach, can hurt your septic system. Many, like laundry spot remover and some floor cleaners contain substances classified as priority pollutants by the EPA (2). Septic systems can't detoxify all of the chemical compounds found in these products and, consequently, some end up in groundwater. Following is a list of alternatives to cleaners you or someone in your family may have used in the past:

Abrasive Cleanser: Mix salt, baking soda and water into a paste.

Bleach: Substitute borax.

Brass: Mix equal parts flour and salt into a little vinegar.

Carpets: Sprinkle borax and vacuum. For stains, rub borax into dampened area, let dry, vacuum.

Coolers: Wipe the inside of insulated plastic coolers with vanilla to eliminate odors.

Deodorizers: Buy house plants, use potpourri, candles, cedar shavings (available in pet shops).

Disinfectants: cup borax plus cup rubbing alcohol in 1 gallon hot water. Do not mix bleach and ammonia.

Drains: Pour 1/4 cup baking soda down drain, follow with cup vinegar. When fizzing stops, flush with boiling water.

Fabric softener: Add 1/4 cup baking soda to final rinse.

Flea collar: Substitute brewer's yeast in pet's diet.

Floors and toilets: 2 tablespoons borax plus 2 tablespoons dish detergent in 1 gallon hot water.

Furniture: 1 ounce lemon juice plus two ounces mineral oil. Toothpaste removes water stains.

Grass stains: Butter-milk rubbed into stain - wash as normal.

Hands: To clean paint and grease off of hands, rub them with baby oil or margarine. Wipe dry on paper towel, then wash with soap and water.

Insects on house plants: Pick off and use mild, diluted dish soap or insecticidal soap available from garden supply stores.

Laundry presoak: Soak spot with 1/4 cup borax in two cups cold water before washing. For greasy stains, rub with corn meal and water or baby oil, rinse with lemon juice, then wash. Soak perspiration stains with one cup of white vinegar in one gallon of water.

Moth repellent: Cedar shavings, lavender.

Ovens: Dampen grimy spots and sprinkle with salt while oven is still warm. Scrape after oven cools. Greasy spots can be scrubbed with straight vinegar or a paste of baking soda and water.

Silver: Soak in baking soda and buttermilk, brush with toothpaste or boil for 3 minutes in one cup water, one teaspoon baking soda, one teaspoon salt and a piece of aluminum foil. Rinse well in water and dry with a soft cloth.

Stains: Club soda will remove fresh blood stains and chocolate stains.

Toilets: Borax and a toilet brush.



Windows: Two tablespoons sudsy ammonia plus 3 drops dish detergent in 1 quart water. Or diluted white vinegar in a spray bottle.

Zebra (and other pet) stains: Rub with 1/4 cup dish detergent in 1/4 cup vinegar. Blot dry, rinse with water.

For more information:

Poison Information Center (for accidental poisonings): (608)2 2-3702 and (414)266-222

U.S. Consumer Products Safety Commission: 1-800-638-2772.

Workshop Tools to Protect Groundwater

Vehicles

Absorbent: Always keep absorbent on hand to clean up spills and drips. "Store bought" absorbent works fine, or use cat litter or Portland cement. Dispose of used absorbent in a plastic bag in the trash.

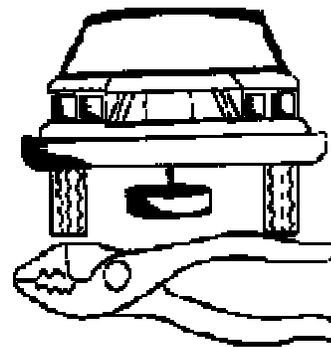
Antifreeze: Can be re-used indefinitely! If dirty, strain through a piece of window screen in a funnel and put back in radiator.

Dirty or Old Gasoline: Filter through a paper coffee filter and mix with fresh gas (5 parts fresh : 1 part old). If old gas contains water, add 3 tablespoons "dry gas" per gallon gas.

Oil Filters: Drain thoroughly, wrap in newspaper, place in plastic bag and dispose in garbage.

Transmission Fluid: Buy recycled transmission fluid - your purchase helps keep transmission fluid out of landfills.

Washing: Wash your car over the lawn rather than on the driveway or in the street. The grass helps decontaminate soaps and will use the phosphate in detergents as fertilizer.



Workshops

Paint: Use lead free paint that doesn't contain mercury or mercuric compounds. Latex or water-based paints are safer than oil-based. If you have extra paint after a project, share with a neighbor, church or theater group.

Paint Stripper: Use a heat gun rather than chemical strippers. Always follow the instructions when using any paint stripping method.

Sidewalk De-icer: Use sand or cat litter to provide traction on an otherwise icy sidewalk.

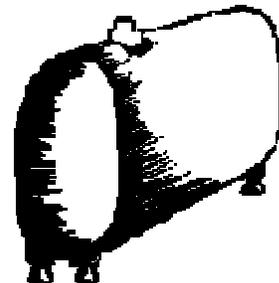
Wood Preservatives: Use pressure treated wood rather than applying liquid

Fuel Oil Tanks

All Tanks: Installation, removal or upgrading of any tank must be done by a state certified contractor.

Buried Tanks: If the tank is not essential, hire a state certified contractor to remove it. If you need to keep the tank, register it with the state of Wisconsin and check it regularly for leaks.

Above Ground Tanks: These fuel oil tanks don't need to be registered. Consider installing a diked concrete pad or an inexpensive



plastic confinement system under your tank to catch spills and overfills.

Basement Tanks: Seal all holes in the basement floor to prevent groundwater contamination in case of leak or accidental overflow.

Leaking Tanks: Immediately call each of the following:

- DNR Leaking Tank Coordinator at your District DNR office.
- Wisconsin Spills Hotline: 608-266-3232.
- Your local fire department.

All Chemical Products

Shopping: BUY ONLY WHAT YOU PLAN TO USE IN ONE YEAR. This reduces fire hazards and groundwater contamination risk. It also assures that you will have fresh products to use. Some products (like pesticides) deteriorate with age. Others (like brake fluid) absorb moisture from the air. Still others (like latex paint) should not be allowed to freeze.

Storage: Store chemicals over a concrete floor away from your well and furnace and out of the reach of children. If you have a basement well, don't store chemicals in the basement. Note: basement wells are now illegal in most situations (see plumbing section on next page).

Your Pipeline to a Safe Water Supply

Septic and Sewer

Pumping- pump your septic tank every 2 - 3 years. A free brochure ("Maintaining Your Septic System") is available. (2)

and

Cleansers- strictly limit the amount of disinfectants, sewer bleach and cleansers that end up in your septic system.

Toxic chemicals - don't put paint thinner, paint, degreasers, pesticides, or oil down the drain.

Chemical septic additives - don't use them. (2)

Failing septic systems - if septic liquids are rising to the surface, get help immediately. (2)

Subdivisions - an average septic system puts about 10 pounds of nitrate per person per year into groundwater. Support efforts to extend sewers out to nearby subdivisions.

Wells

Water tests - if you have your own well, get a homeowner's water test and then test water yearly for nitrate and bacteria (1). If it tests unsafe, get help right away (2). If the nitrate nitrogen level is 10 parts per million (ppm) or higher, use bottled water for making infant formula. Test the air in your basement for radon (4).

Well Safety - a free brochure ("You And Your Well") explains how to check your well for safety. (2)

Basement and pit wells - these are often illegal and should be replaced with safe, modern wells which meet state and local codes. (1) (2)

Unused Wells - properly abandon as soon as possible. A video and brochure are available. (3), (4)

Deep Wells - if your well extends into bedrock, contact the DNR about testing your water for radiation and radon. (4)

Pipes and Faucets

Anti-backflow devices - these keep contaminants from siphoning back down your well. They're available in most local hardware stores and should be placed on outdoor faucets, sprinkler systems and laundry tubs. (2)

Conservation - use water-saving showerheads, faucets and toilets.

Copper pipes - if you have copper pipes with lead based solder, test your water for lead. (2)

Water treatment - before buying any treatment device for a health related contaminant (like bacteria, nitrate or pesticides), find out if the device is appropriate for the contaminant in question and is state approved. (4)

For More Information:

1. Your District DNR office. Found in the "blue" pages of your telephone book
2. DNR Bureau of Water Supply. (608) 266-3415
3. Radon Information Center. (608) 785-9872 or (414) 929-3173
4. Order Publ #g3358-1 "Keeping Your Home Water Supply Safe" from Extension Publications, Rm. 245, 30 N. Murray St., Madison, WI 53715; phone (608) 262-3346.

