

Water Quality Protection

SAFE AND HEALTHY LIVES
IN SAFE AND HEALTHY
COMMUNITIES



Residential Series
March 2004

What You Can Do About Nonpoint Source Pollution

RHODE ISLAND IS A STATE RICH IN WATER RESOURCES. From our freshwater lakes and ponds, rivers and streams, and abundant groundwater resources to our coastal ponds, estuaries, Narragansett Bay, and the Atlantic Ocean, our water resources sustain our livelihood. Our land use activities affect the quality of these water resources. There are many things that each of us can do to protect water resources. In this factsheet, we focus on Nonpoint Source Pollution.

What is nonpoint source pollution?

Unlike pollution that is discharged from industrial and sewage treatment plants, nonpoint source pollution, or NPS, comes from widespread sources on the landscape. Examples of NPS include: failing or improperly managed septic systems; leaking sewers; animal waste that is not managed properly; fertilizers and pesticides that are not used, stored and disposed of properly; leaking underground storage tanks; cars that are leaking oil and anti-freeze; fuel spills; and the list goes on. While the amount of pollution generated by an individual home may appear to be small the total effect from home to home throughout a watershed is significant.

To understand how NPS affects water quality, consider the water cycle and how water moves in the environment. When precipitation falls to the earth's surface, it can evaporate, soak into the ground, or travel over the land surface towards surface water bodies and the ocean. As rainfall, snowmelt, or excessive irrigation water moves over or below the land's surface, it can pick up and carry away natural and man-made pollutants – or NPS. These pollutants can end up in surface waters or move through the soil to groundwater resources impacting water quality.



What is the effect of NPS on our waters?

The US Environmental Protection Agency considers NPS the leading threat to water quality in the Nation. The specific water quality impacts will depend upon the pollutant. As watersheds become developed, urbanization and an increase in paved surface areas such as parking lots, driveways and rooftops increase stormwater runoff causing

precipitation to run off quickly into surface waters resulting in:

- ◆ Overall reduction in groundwater recharge
- ◆ Long-term lowering of groundwater tables and loss of stream flow during dry weather
- ◆ Increased erosion of stream banks
- ◆ Increased water quality impacts caused by pollutants associated with urban runoff
- ◆ Flooding—especially more frequent “flash” flooding

Nutrients can upset the delicate balance of the aquatic ecosystem. Nutrients come from the natural breakdown of human and animal wastes and from fertilizers applied to residential, agricultural, recreational, and commercial landscapes. Nutrients that are transported to a surface water body can cause a boom in plant and algae growth. This rapid plant growth reduces water clarity, alters aquatic habitat, and robs the water of oxygen as bacteria breakdown the decomposing plants and algae. Excess phosphorus encourages plant growth in freshwater and excess nitrogen encourages plant growth in saltwater. In addition, nitrate-nitrogen is a drinking water contaminant and should not exceed the Federal Drinking Water Standard of 10 milligrams per liter (or 10 parts per million).

Pathogens, or disease causing organisms, include viruses, parasites, and protozoa (single-celled microscopic organisms). Sources of pathogens include human and animal waste. A common source of pathogens in stormwater runoff is pet waste. When pet waste is not picked up and properly disposed of, stormwater runoff can carry it into storm drains and surface waters. Failing or improperly managed septic systems can also contribute pathogens to ground and surface waters.

Sediment can be carried in runoff and deposited into surface waters from construction sites, agricultural and recreation fields, home lawns and gardens, and from roads receiving winter sand and salt applications. These sediments can

destroy aquatic habitats, smother feeding and breeding grounds, clog fish gills, and make the water cloudy or turbid. Additionally, some pollutants, such as phosphorus, bacteria, and some chemicals attach to soil particles and can travel to surface waters with the eroding sediments.

Many man-made, or synthetic, chemicals are harmful to both humans and aquatic organisms. Sources of these contaminants include automobile fluids, fuels, many household cleansers and disinfectants, pesticides, and many more. One quart of oil can contaminate up to two million gallons of drinking water! MTBE, a gasoline additive, is showing up in groundwater throughout the Nation, impacting both public and private drinking water supplies.

Heavy metals that are found in stormwater runoff include cadmium, chromium, copper, lead, mercury, and zinc. These metals are often contained in gasoline, tires, brake pads, corroded metals, paint, motor oil, and wood preservatives.

De-icing salts applied during winter and their improper storage can result in contamination of surface and ground waters. Drinking water with elevated sodium or chloride levels may be a concern for people on low sodium diets.

What can I do to reduce NPS?

Once NPS enters our water resources, it can be very difficult and expensive to clean up. The best approach is for each of us to take actions that reduce these pollutants and prevent them from entering water resources. Each of us makes a difference. Together, we can keep our waters healthy. The first step is to take a close look at our everyday activities in and around the home and yard and note where changes can be made to reduce the potential for NPS.

Below are some specific steps you can take to reduce nonpoint source pollution around your home.

Yard and Garden - see our website www.healthylandscapes.org for more information

- ◆ Choose the right plant for the right spot. Sustainable and native plants that tolerate the given site conditions specific to your yard reduce the need for intensive inputs such as fertilizers, pesticides and irrigation water.
- ◆ Recycle your yard waste. Grass clippings, leaves and plant prunings are all valuable sources of mulch or ingredients for compost. Yard waste is a pollutant when washed directly into storm drains and surface waters.
- ◆ Use fertilizers and pesticides responsibly. Base fertilizer





applications on soil test recommendations and consider using organic sources of fertilizer. Correctly identify a pest and treat with alternative to chemical options where possible. Avoid using pesticides as a preventative measure. Measure the area to be treated or fertilized, calibrate your spreader, and avoid applying or handling fertilizers or chemicals on paved surfaces or near drinking water wells, storm drains and surface waters.

- ◆ Water wisely. Use a rain gauge to measure weekly rainfall and make up the difference (about one inch of water needed per week in the summer) with irrigation. Water during early morning hours and one long, slow watering event each week is best. Wet leaves at night increase risk of plant disease. Be sure in-ground sprinkler systems have a manual control option. Use low-flow soaker hoses and drip irrigation for vegetable gardens and beds.
- ◆ Reduce runoff from your yard and increase groundwater recharge. Reduce paved surface areas around your yard. Direct roof runoff and other concentrated runoff to areas that can allow it to settle and soak into the ground. Options include rain gardens, border beds of shrubs and groundcovers, and placement of crushed stone.
- ◆ Reduce soil erosion. Keep it planted and mulched. Protect the soil by maintaining perennial vegetative cover, winter cover crops, mulch, or crushed stone in heavy traffic areas.
- ◆ Pick up after your pets. Pick up solid waste and properly dispose of it in the trash, flush it down the toilet, or through proper burial methods. Do not locate dog runs or yards near drinking water wells, storm drains or surface waters. Do not encourage resident waterfowl. Refer to factsheet *Pet Waste and Water Quality* for more information.
- ◆ Use and dispose of fuels and hazardous products properly. Do not store or maintain fuels and motorized equipment near a drinking water well, storm drain or surface water.

Proper use, storage and disposal of household hazardous products - Refer to factsheet *Household Hazardous Products* for more information.

- ◆ Carefully follow the product label directions for use and storage.
- ◆ Keep products in their original, labeled containers and in cool, dry well-ventilated areas that are out of reach of children and animals.
- ◆ Buy only what you need. Give surplus products to friends, neighbors and groups who can use them.
- ◆ Look for non-toxic alternatives. For example, latex, water-based paints.
- ◆ Do not pour paints, used oil, cleaning solvents, polishes, pool chemicals, insecticides, and other household chemicals down the drain, in the yard, or on the street.
- ◆ Dispose of household hazardous waste properly (contact the RI Eco-Depot) and recycle wastes where possible.

Septic System Maintenance

- ◆ Have your septic system inspected annually and pumped as needed.
- ◆ Avoid using chemical and other septic system additives.
- ◆ Place only toilet paper in the toilet.
- ◆ Conserve household water, reducing the amount of wastewater entering the septic system.
- ◆ Spread major water-using chores out evenly during the day and week.
- ◆ Don't pour hazardous household products down the drain.
- ◆ Compost kitchen wastes rather than use a garbage disposal.

Vehicle Maintenance

- ◆ Consider car pooling or public transportation where possible. Consider walking or riding a bicycle when traveling short distances. Driving less reduces the amount of pollution your automobile generates.
- ◆ Recycle used motor oil and do not pour waste oil on the ground or down storm drains. Used motor oil can often be accepted and recycled at local sanitation departments, service stations, or the RI Eco-Depot.
- ◆ Keep up with car maintenance to reduce leaking of oil, antifreeze, and other hazardous fluids.
- ◆ Hand-wash your car on the lawn. Do not leave the hose running while washing the car. If you are unable to keep car wash runoff from leaving the driveway or yard, consider taking your car to a commercial car wash facility.

Water Conservation – refer to factsheet *Water Conservation in and around the Home* for more information

- ◆ Use low-flow and water saving fixtures and appliances.
 - ◆ Repair plumbing leaks promptly.
 - ◆ Use dishwashers and clothes washers only when fully loaded.
 - ◆ Take short showers instead of baths and avoid letting faucets run unnecessarily when shaving or brushing your teeth. Catch the water in a bucket as you wait for it to get hot and use it to water plants.
 - ◆ Write or call your elected representatives to inform them about your concerns and encourage legislation to protect water resources.
 - ◆ Get involved in local planning and zoning decisions and encourage your local officials to develop erosion and sediment control ordinances and wastewater management programs or sponsor hazardous waste pick-up days.
 - ◆ Promote environmental education. Help educate people in your community about ways in which they can help protect water quality. Involve community groups.
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Other Areas Where You Can Make a Difference

- ◆ Participate in clean-up activities in your neighborhood.

For More Information:

University of Rhode Island Cooperative Extension Home*A*Syst Program

Offers assistance, information, and workshops on residential pollution prevention including private well water protection, septic system operation and maintenance, landscaping for water quality protection, and actions residents can take to reduce pollution. 401-874-5398 www.uri.edu/ce/wq

Refer to our website www.healthylandscapes.org for more information on sustainable landscaping and stormwater runoff control.

RI Department of Health, Office of Drinking Water Quality

Offers assistance and information on private well water testing and state certified water testing laboratories.

401- 222-6867 <http://www.health.ri.gov/environment/dwq/Home.htm>

For a listing of HEALTH's certified private laboratories in Rhode Island <http://www.health.ri.gov/labs/instate.htm>

URI CE GreenShare Program

(401) 874-2900 www.uri.edu/ce/ceec

The GreenShare Program provides scientifically accurate and environmentally sound information on management of suburban and urban landscapes. Integrated pest management, pollution prevention and sustainable landscaping are the guiding principles of all GreenShare programs. The Sustainable Trees and Shrubs publication is available on-line at: <http://www.uri.edu/ce/factsheets/sheets/sustplant.html>

The URI Plant Protection Clinic identifies insects on plants and in the home, and will diagnose plant diseases.

www.uri.edu/ce/ceec/plantclinic.html

Rhode Island Resource Recovery Corp., Rhode Island Eco-Depot

For information on household hazardous waste disposal, non-toxic alternatives and recycling.

(401) 942-1430 ext. 241 www.rirrc.org/site/ecodepot/eco_main.asp

Adapted from: "Do's & Don'ts Around the Home" by Robert Goo. EPA Journal Article, November/December 1999, EPA-22K-1005. "What is Nonpoint Source (NPS) Pollution? Questions and Answers." 1997. www.epa.gov/owow/nps/qa.html

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