

After the Storm

For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

*A Citizen's Guide to
Understanding Stormwater*



EPA 833-B-03-002

January 2003



What is stormwater runoff?

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.



Why is stormwater runoff a problem?



Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

The effects of pollution

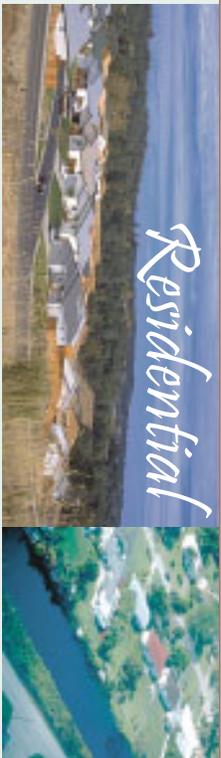
Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- ◆ Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- ◆ Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- ◆ Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- ◆ Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- ◆ Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- ◆ Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.



Stormwater Pollution Solutions

Residential



Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care

Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.



- ◆ Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- ◆ Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- ◆ Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- ◆ Cover piles of dirt or mulch being used in landscaping projects.

Auto care

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- ◆ Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- ◆ Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.



Septic systems

Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.



- ◆ Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- ◆ Don't dispose of household hazardous waste in sinks or toilets.

Pet waste

Pet waste can be a major source of bacteria and excess nutrients in local waters.



- ◆ When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

Education is essential to changing people's behavior. Signs and warnings near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.



Residential Landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.

Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted



with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.

Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.

A photograph of a residential street with houses and parked cars.

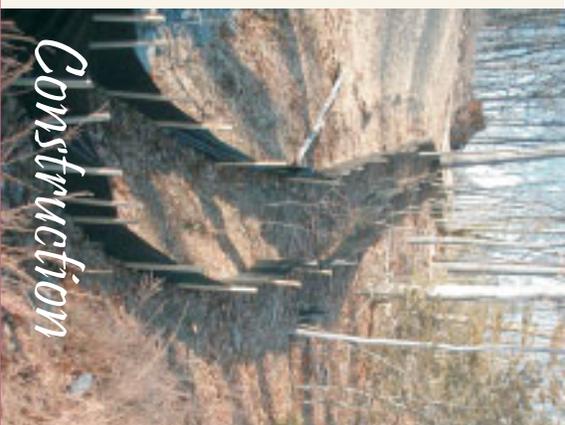
Commercial

Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- ◆ Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- ◆ Cover grease storage and dumpsters and keep them clean to avoid leaks.
- ◆ Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- ◆ Divert stormwater away from disturbed or exposed areas of the construction site.
- ◆ Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- ◆ Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.

A photograph of a construction site with a large pile of dirt and rebar.

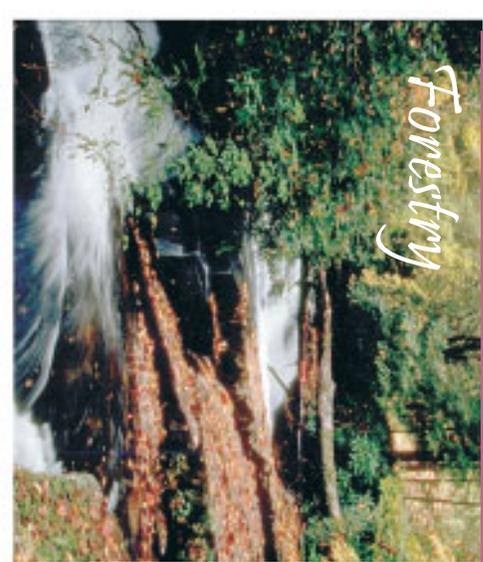
Construction

A photograph of a green agricultural field with a tractor.

Agriculture

Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.

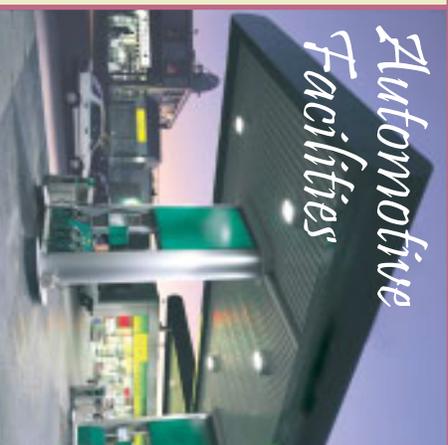
- ◆ Keep livestock away from streambanks and provide them a water source away from waterbodies.
- ◆ Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- ◆ Vegetate riparian areas along waterways.
- ◆ Rotate animal grazing to prevent soil erosion in fields.
- ◆ Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.

A photograph of a stream flowing through a forest.

Forestry

Improperly managed logging operations can result in erosion and sedimentation.

- ◆ Conduct preharvest planning to prevent erosion and lower costs.
- ◆ Use logging methods and equipment that minimize soil disturbance.
- ◆ Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- ◆ Construct stream crossings so that they minimize erosion and physical changes to streams.
- ◆ Expedite revegetation of cleared areas.

A photograph of a modern gas station at night.

Automotive Facilities

Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- ◆ Clean up spills immediately and properly dispose of cleanup materials.
- ◆ Provide cover over fueling stations and design or retrofit facilities for spill containment.
- ◆ Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- ◆ Install and maintain oil/water separators.

MAINTAIN YOUR BOAT WISELY

- Keep your engine clean so you can spot leaks
- Inspect lines & hoses, replace when degraded
- Use premium two-cycle engine oil
- Use a vacuum sander for topside maintenance
- When scraping or sanding boat bottoms, catch old paint & shavings for on-shore hazardous waste collection
- If you do fill your tank upon return to port, fill it up only 90%
- Slip a plastic bag over used oil filters before they are removed to capture drips
- Use alternatives to toxic bottom paints

PROTECT SENSITIVE HABITAT

- Proceed slowly in shallow areas
- Do not disturb wildlife
- Avoid contact with submerged aquatic vegetation (SAV)
- Watch your wake - it can lead to shoreline erosion & disturb wildlife
- Be careful not to lose fishing lines or nets in the water - they can entangle and kill birds, fish, and other wildlife

IMPORTANT PHONE NUMBERS FOR BOATERS

Sewage

- Free Pump Outs - call North Hempstead Town Dock @ 767-4622 or TONH Pump-Out Boat on VHF Channel 9 Use Shoreside Facilities Whenever Possible

Oil Spills

- USCG @ 1-800-424-8802
- NYSDEC 1-800-457-7362

EMERGENCY PHONE NUMBERS

- USCG@ Ft. Totten
1-718-352-4422 or VHF Channel 16
- USCG LI Sound Group @
1-203-468-4401 or VHF Channel 16
- Nassau County Marine Police
1-516-573-4450 or VHF Channel 16
- TOBAY Bay Constable 624-6201
- TONH Bay Constable 767-4622 or VHF Channel 16
- TONH Pump-Out Boat VHF Channel 9
- TONH Town Dock 767-4622 or VHF Channel 16
- NYS DEC Tag Fish -
1-800-448-8322
- Wildlife/Injured Animals
1-516-333-6262 or
1-516-423-0982

CONTAIN TRASH

If trash blows overboard, retrieve it

Buy products without plastic or excessive packaging - plastic is deadly to fish & birds

Do not toss cigarette butts overboard

RECYCLE

Recycle cans, glass, plastic, newspaper, and hazardous wastes such as antifreeze, oil, filters, paint and lead batteries

Call 767-4600 (Town of North Hempstead) or 755-1839 (Town of Oyster Bay) for locations

Dispose of non-recyclable hazardous wastes properly

Never discharge used motor oil or other engine fluids into the water.

FUEL CAUTIOUSLY

Don't over fill your fuel tank - remember, fuel expands as it warms up

Fill your tank just before leaving on a trip

Use oil absorbent material to catch drips from the fuel intake and the vent overflow

CONTROL OIL IN THE BILGE

Keep your engine well tuned; no leaking seals, gaskets or hoses

Place oil absorbent material or bio-remediating bilge boom in the bilge

Place an oil absorbent pad and, if possible, a tray under the engine

Replace oil absorbent materials at least once a year

Secure fuel hoses to prevent chafing and leaks

Thanks to the Maryland Department of Natural Resources, California Coastal Commission, and NY/NJ Harbor Estuary Program for the use of their materials.

Manhasset Bay Protection Committee

The Manhasset Bay Protection Committee is an inter-municipal committee dedicated to the restoration and protection of Manhasset Bay and its watershed.

Please contact us for more information:

P: 516-869-7835

F: 516-869-7798

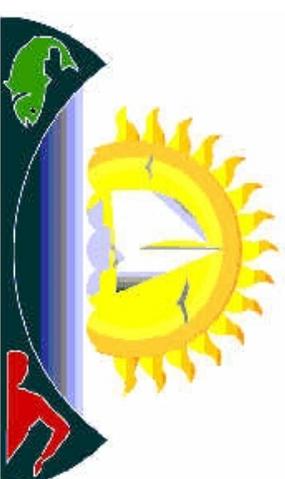
www.manhassetbayprotectioncommittee.org

Email:

director@manhassetbayprotectioncommittee.org

Members:

Nassau County, Town of North Hempstead, and Villages of Baxter Estates, Great Neck, Kensington, Kings Point, Manhasset, Munsey Park, Plandome, Plandome Manor, Plandome Heights, Port Washington North, and Thomaston.



Manhasset Bay Protection Committee

Clean Boating Tips

210 Plandome Road
Manhasset, New York 11030

P: 516-869-7835

F: 516-869-7798

Email:

director@manhassetbayprotectioncommittee.org

Web:

www.manhassetbayprotectioncommittee.org

A coalition of villages, Town, and County, dedicated to the restoration and protection of Manhasset Bay and its watershed.

Revised April 2003

LAWN CARE WASTE REDUCTION TIPS

How do you dispose of grass clippings after mowing the lawn?

- Put them in the garbage?
- Put them on the curb for collection?
- Compost them?

Why not try to “LEAVE IT ON THE LAWN!” It will:

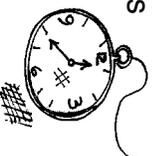
- Benefit the environment.
- Improve your lawn.
- Save time.
- Save landfill space.

WHY YOU SHOULD “LEAVE IT ON THE LAWN”

- ◆ Benefits the environment by reducing the amount and frequency of fertilizer application. Grass clippings are 80% water and contain 2-4% nitrogen, phosphorus, potassium and other nutrients. This is also good for you (lower fertilizer costs).
- ◆ Improves your lawn. Leaving grass clippings on the lawn returns nutrients to the soil resulting in healthier turf.



- ◆ Saves time. Since the grass is no longer bagged, fewer stops are required.



- ◆ Reduces the amount of garbage you throw out. Grass clippings can account for as much as 10% of the garbage we produce.

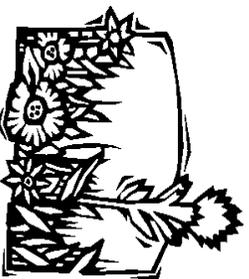


HOW TO

“LEAVE IT ON THE LAWN”

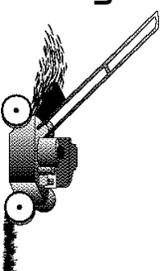
Allow your grass to grow to three inches and then cut no more than one inch off the top. This is the “one-third” rule. This helps develop a deeper root system which is a natural defense against weeds, disease and drought.

During fast growing periods you may have to cut the grass every four to seven days.



COMMON QUESTIONS

1. Do grass clippings cause thatch?
No. Thatch is an accumulation of the “woody” parts of the grass plants: stems, roots and stolons, not the clippings. Thatch is most often caused by over watering and over fertilizing.



2. Isn't it more work to mow the lawn often enough to keep the clippings short?
No. Cutting grass before it is overgrown is easier and faster. Eliminating the time and effort it takes to bag clippings further shortens the mowing time.

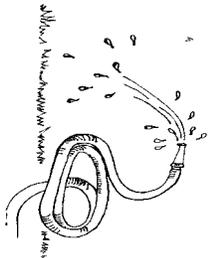
3. What if my lawn grows too high between mowings to leave the clippings?
You have several options. You may mow over the clippings to further shred and scatter them. You may raise the mower height so only the top third of the grass blade is removed and then gradually lower the mower height over the span of several mowings.

4. Do I need a mulching mower?
No. Mulching blades and adapt or kits are available for many types of lawn mowers. When it is time to replace your mower, consider purchasing an electric mulching mower.



OTHER USEFUL LAWN INFORMATION

- ✓ Watering your lawn is best done in the early morning. An inch of water per week is sufficient for good root growth.



- ✓ Fertilizing varies with soil types and growing conditions. The rule of thumb is 2 to 4 pounds of nitrogen per 1000 square feet of lawn per year.

Test the soil to determine your fertilizer need and remember to adjust the pH of the soil to between 6.5 and 7.2. This will improve the efficiency of the nutrients.

Studies have shown that grass recycling reduces the need for fertilizer by 25%.

FOR YOUR INFORMATION

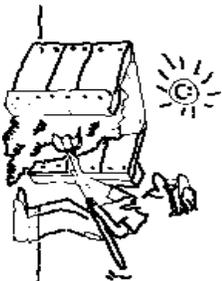
- ✎ 1/4 acre of lawn produces more than 1/2 tons of clippings during the growing season!
- ✎ The overall time spent on lawn care decreases with the elimination of bagging, even when mowing increases to once every four to seven days!



DO YOU COMPOST YARD DEBRIS?

If you don't want to leave grass clippings on your lawn, try backyard composting.

Composting your organic wastes in the backyard is simple and beneficial.



There are many methods to backyard composting ranging from a simple pile to a purchased composting bin.

For more information on "Leave It On The Lawn" or backyard composting call:

**The Composting Hotline at
(518) 457-8704**

or write to:

Bureau of Waste Reduction & Recycling
Division of Solid & Hazardous Materials
NYSDEC
625 Broadway
Albany, NY 12233-7253

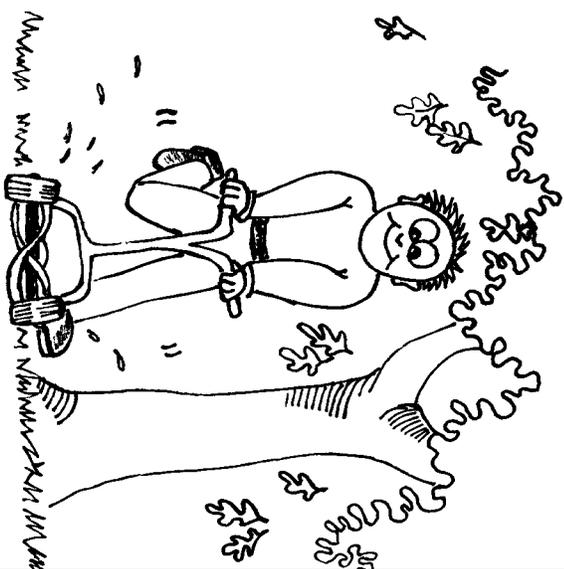
Or contact your local
Cornell Cooperative Extension Office.

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New York State
Department of Environmental
Conservation

LEAVE IT ON THE LAWN



(Grass Recycling)

George E. Pataki, Governor
Erin M. Crotty, Commissioner

TIRE TIPS

Maintaining tires properly can help your tires last longer. This not only saves you money on replacement costs, but also helps reduce the number of tires requiring disposal.

Follow this List of Helpful Hints:



Use the recommended size tire for your vehicle. Undersized tires can lose 10 percent of their life and waste gas.

Keep tires inflated at the recommended pressure listed in your vehicle owner manual. Check and adjust pressure when the tire is cool (tire pressure increases as the tire heats up with use).

Start and stop your vehicle slowly when possible and decelerate before corners. Fast stops and starts and tire squealing wear rubber off your tires and take miles off their operating life.

Drive the speed limit. Higher speeds increase tire temperature and causes extra wear.

Keep tires balanced and rotate every 6,000-8,000 miles (or as recommended by your tire manufacturer) to save hundreds of miles in wear.

Radial tires improve gas mileage. Steel-belted tires are generally the most efficient.

Slow down on rough roads and avoid potholes. Damage to your tires will decrease their useful life.

Finally, consider buying retread tires to encourage markets that reuse old tires.

Tires which are improperly disposed are an unsightly public nuisance. Tire dumps are an ideal breeding grounds for disease-bearing mosquitoes and animals and cause significant air and water pollution if they catch on fire.

Be sure to properly dispose of your old tires.

CHANGE YOUR OWN OIL

It's against the law to dump oil

- on the ground,
- in the street,
- down a drain, or
- in the trash!

Oil dumped, accidentally or deliberately, can kill plants and animals and pollute soil and water. It is important to prevent even small spills. Just a quart of oil from one oil change can ruin the taste of a million quarts of drinking water.

Instead of dumping it, take your used oil to a service station or a retail oil dealer for recycling. Used oil from vehicles, snowblowers, lawnmowers, snowmobiles and motorcycles can be reprocessed and re-refined into lubricating or heating oil.

Just Be Sure To:

- Keep your used oil pure, don't mix it with anything else.
- Store it in a clean plastic container with a tight lid.
- Take it to a collection point for recycling.

Information You Need to Know

Environmental Conservation Law requires service stations that annually sell 500 gallons of oil and retailers that annually sell 1,000 gallons of oil to accept up to five gallons of used oil per person per day at no charge.

Service stations and retailers may temporarily refuse to accept used oil only if their holding tanks are full.

Retailers that cannot provide collection and storage for used oil may contract with another establishment to provide these services. The retailer must post a sign indicating the location of the contracted service establishment.

If a service station or retailer won't take your used oil, notify the New York State Department of Conservation (DEC) regional office nearest you.



LEAD-ACID BATTERY RECYCLING

Get a Jump on It!

If you have a dead battery you should know that it is now illegal to dispose of the battery in your trash. Most of us use lead-acid batteries in our cars, trucks and recreational vehicles.

With use, these batteries run down and eventually die. If not properly handled, lead-acid batteries can leak contaminants into soil and water.

Instead, you must take your dead battery for recycling to a retail store, distributor, or battery recycling facility.

By law, retailers must accept used batteries from customers and distributors must accept used batteries from their retailers.

When Purchasing a New Lead-Acid Battery:

 You can give your used battery for recycling to a retailer at the time you purchase a new one.

 The retailer will charge you a \$5 "return incentive payment" if you do not return a used battery when buying a replacement.

 The retailer, who sold you the battery, will refund the \$5 payment if you return a used battery within 30 days of the purchase date.

Retailers and Distributors Must:

- Accept, free of charge, up to two used batteries per month from any individual.
- Post signs displaying the universal recycling symbol and stating the following:

**IT IS ILLEGAL TO
DISCARD VEHICLE BATTERIES.
STATE LAW REQUIRES US TO
ACCEPT VEHICLE BATTERIES
FREE OF CHARGE FOR RECYCLING.**

Retailers can legally keep unredeemed payments.

Write or call us:

NYS Department of Environmental
Conservation
Division of Solid & Hazardous Materials
Bureau of Solid Waste, Reduction & Recycling
625 Broadway
Albany, New York 12233-7253
(518) 402-8706

or email us at:
recycling@gw.dec.state.ny.us
and check out our web page at:
www.dec.ny.gov/chemical/8801.html

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New York State Department of
Environmental Conservation

Don't Let Your



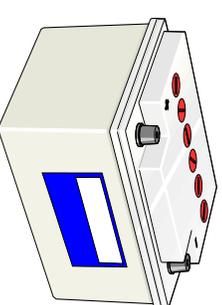
Tires...

Used Oil...



Or

Lead-Acid Batteries



Pollute the Environment!