CAR WASHING

ISSUE

How can washing your car in your own driveway be a problem for Long Island Sound[A]?

Washing your vehicle can be one of the more harmful things done around the house. When you wash your car, truck, RV, or boat at home water running off generally finds its way to nearby storm drains. Storm drains carry excess rainwater directly into nearby waterways without any additional cleaning of that water. Since local waterways in the watershed of the Sound generally feed into the Sound, whatever runs off of your driveway winds up untreated in Long Island Sound, so putting anything down a storm drain is the equivalent of dumping it straight into your local lake, river or Sound.

So why is that a bad thing?

PROBLEM

The problem with washing your vehicle at home is two-fold: 1) excess water usage 2) pollution of local waterways and invariably Long Island Sound.

CAR WASH OPTIONS AND WATER CONSUMPTION

- **Washing your car at home**: at least 50 gallons
  - A standard 5/8"garden hose running at 50 pounds per square inch uses 10 gallons of water ***per minute***[1] (this is without the use of a nozzle that stops the continuous flow of water).
  - The average person who takes extreme care not to waste water, takes 5-6 minutes to wash and rinse their car for a total consumption of 50-60 gallons. For individuals who allow the water to run while they clean, this number can jump to a staggering 150-200 gallons.

- **Washing your car at a self-serve car wash**: a ***total*** of 12 to 14 gallons for the average amount of dirt (a very dirty car would require more)[2]
  - Foaming Brush uses approximately 1 quart of water during a four minute cycle;
  - Pre-Soak uses approximately 3 quarts of water to cover a car;
  - Tire Cleaning uses less than 1 quart of water per car;
  - Spot-Free Rinse uses approximately 1.5 gallons of water per minute.
  - High-Pressure Wash (approximately 1000 PSI) uses about 3.5 gallons of water per minute.

[1] International Carwashing Association- http://www.carwashes.com/environ/
[2] International Carwashing Association- http://www.carwashes.com/environ/

- High-Pressure Wax uses about 3.5 gallons of water per minute.
- High-Pressure Rinse uses approximately 3.5 gallons of water per minute.

- **Professional car washing**: a ***total*** of 11.1 gallons (this number is for the average compact car, SUVs and trucks combine to bring the average of all vehicles to 20 gallons)
  - Flow rate: 2.6 minutes wash and rinse at 3 gallons per minute; 5.3 minutes pre-soak foaming brush and tire & engine cleaning at 0.6 gallons per minute.
  - Thus the average water used for wash and rinse is 7.9 gallons and the average water used for pre-soak foaming brush and tire & engine cleaning is 3.2 gallons.[3]

The water from your carwash contains pollutants ranging from oil, grease, and suspended solids to detergents. Detergents[B], such as the carwash or liquid soap can seriously affect the water quality of local waterways. They are a universal contaminant of public water supplies. Some of pollutants they contain are as follows: phosphates, sodium, potassium, boron salts, enzymes, cellulose ethers, flurescers, silicates and sulphates with phosphates[C] being the biggest offender.

When in sufficient quantities, detergents, even the biodegradable ones, can have a toxic effect on a wide variety of marine life! All detergents ruin the protective external mucus layers of fish, leaving the animal highly susceptible to bacteria and parasites. Furthermore, the detergents can cause extreme damage to the gills, thus making respiration very difficult, if not impossible. Detergent concentrations as low as 5 parts per million will kill fish eggs and concentrations near 15 parts per million, will cause most fish to perish. Other aquatic life falls prey to the lower water surface tension caused by these detergents. When surface tension is low, fish can easily absorb organic chemicals such as pesticides and phenols[D]. A detergent concentration of only 2 parts per million can cause fish to absorb double the amount of chemicals they would normally absorb.

SOLUTION

Minimize all detergent use, particularly those uses that are not treated before reaching Long Island Sound- like vehicle washing. Wash your car/truck/boat at a self-serve or commercial car wash. The water polluted with minerals, oil and detergents is funneled into a drain that is then either piped to a water pollution control plant for treatment or recycled. If this is not a possibility for you, then try the following:

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[3] International Carwashing Association- http://www.carwashes.com/environ/

1) Wash your car in a grassy area or on other pervious or porous surfaces such as gravel so that the water can filter through layers before going into the ground.
2) Try using very mild detergent or biodegradable soap, or if the vehicle is not too dirty, try using just water and a sponge (many car fanatics swear by this method).
3) Use a bucket of water and dispose of the water in the sink (so that the water will be treated) and/or use a hose with a nozzle that can stop the free flow of water.

SPECIFIC ACTIONS YOU CAN DO TO PROTECT LONG ISLAND SOUND FROM DETERGENT POLLUTION

Little or No Extra Time or Effort Needed:

- Buy carwash labeled environmentally friendly, biodegradable and low phosphate (while this is better than using regular detergents, these phrases do not mean free of toxins) or even better- make your own!

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- If in a crunch, look for detergents with less than 0.5% phosphates
- Use less soap
- Use a bucket of water instead of a running hose and dispose of dirty water in the sink.
- Wash on a grassy or other pervious or porous surface that can provide filtration treatment for small and infrequent discharges
- Conserve water by using a shut off nozzle on your hose

More Time Needed, BUT Bigger Impact:

- Do not directly discharge or allow wash water to be indirectly discharged down any storm drain
- Use a self-serve or other car wash facility, especially when removing salt[F] from your car during the winter. These facilities conserve water, discharge their water into a sanitary sewer or recycle it, and do not drain discharge into storm drains. (It has been estimated that professional car washes *average* 20 gallons per car compared to home washes which average 150 gallons per car)
- Cover your car. It can reduce the need for frequent washing and waxing as well as protect the finish from fading.

Most Time Needed, BUT Huge Impact:

- If your organization is having a carwash fundraiser, use a local self-serve or commercial facility. Some commercial car wash operators may be willing to sponsor your event and make available use of their facilities.

MORE INFO:

1) *Pollution Prevention Fact Sheet: Car Washing*; http://www.stormwatercenter.net/Pollution_Prevention_Factsheets/CarWashing.htm
2) *Understanding Watershed Behavior*, Article 126 ; http://www.stormwatercenter.net/Practice/126-Understanding%20Watershed%20Behavior.pdf
3) *The Dirty Secret of Washing Your Car at Home*; http://www.forester.net/sw_0106_trenches.html
4) *Environmental Boating*; http://www.cyberus.ca/~longisland/enviroboat.htm
5) *Boating Environmental Practices*; http://www.dnr.state.oh.us/watercraft/brochures/purchases.html
6) *Planet First:* easy and positive ways to help your environment; http://www.geocities.com/planetfirst_au/starts_at_home.html

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[A] **Long Island Sound Watershed**

Estuaries

Long Island Sound is an estuary. An estuary is a tidal body of water that is fed by both salt and fresh water sources. Estuaries are partially sheltered water sources that are protected by land from harsh winds, and storms, that occur in oceans. Because of this protection, estuaries are perfect habitats for marine creatures in early stages of development. Estuaries are special because they act as transition habitats for marine animals moving from fresh water sources to ocean habitats. They also act as temporary homes or resting places for many creatures such as migratory birds and mammals, and as breeding grounds for many fish and other wildlife, and as permanent homes to shellfish and finfish. Tens of thousands of species can be found in an estuary. Many types of birds, fish, and mammals depend on estuaries for survival.

Estuaries are important because they are among the most productive systems on earth. Due to the unique water chemistry, many habitats are created. The mixture of salt and fresh water, tidal conditions, and shelter from harsh atmospheric conditions, create a unique and critical habitat for the survival of many marine species. Habitats are very

diverse in estuaries ranging from less to concentrated saline areas, rocky shores to sandy beaches, mud flats to coral reefs, shallow harbors to deeper open waters, and regularly flushed areas to more stagnant enclosed areas.

Long Island Sound

Long Island Sound is bordered by New York and Connecticut. It is approximately 110 miles long and at its widest point reaches 21 miles. It is unusual in that it connected to the ocean at opposite ends: "the Race" at its eastern end, and the East River at its west end. (Most estuaries have only one connection to the ocean.) Long Island Sound's salt-water source is the Atlantic Ocean; its fresh water is from all of the rivers that drain to it, but the most significant fresh water sources are the Housatonic, Connecticut, and Thames Rivers.

Over 5,000,000,000 dollars is generated from activities related to Long Island Sound, including sport fishing, boating, swimming, and beach-going as well as commercial fishing. Long Island Sound's oyster fishery is one of the largest in the United States, generating 95% of the Nation's oysters.

Long Island Sound Watershed

Although Long Island Sound itself is 110 miles long, its watershed covers more than 16,000 square miles – an area the size of Delaware times eight. Long Island Sound's watershed covers all of Connecticut and parts of New York, Massachusetts, Rhode Island, Vermont, New Hampshire, and a small portion of Quebec, Canada. It is estimated that 8,000,000 people live within Long Island Sound's watershed. Because of the large human population in the watershed, human impacts are high.

We all live in a watershed. Watersheds consist of a network of land and water that eventually join at one location, much like the branches of a tree come together at its trunk. Watersheds channel water from rain, snow, and ice and from underground sources to larger bodies of water. Watersheds are the land that water flows across as it makes its way to gutters, streams, bays, lakes, and rivers, and out to estuaries and eventually the ocean. In this process, nutrients are picked up and deposited into these bodies of water as well as on the land along the way. Watersheds can be small or large; the Long Island Sound watershed is large, but consists of a network of many smaller watersheds. Because watersheds are networks, changes to one watershed will affect others downstream.

Due to the significant human population in Long Island Sound's watershed, human-induced activities have a detrimental effect on water quality in the Sound. Humans have

altered the land in the watershed, reduced open spaces, and have caused both point and non-point types of pollution in the watershed and in the Sound.

Point-source pollution is pollution from a specific source. It is the type of pollution that is discharged from a pipe from a factory, industrial site, or sewage treatment plant. It is the image most commonly associated with pollution. Although point-source pollution is an important issue concerning Long Island Sound and other water bodies, another type of pollution has an even greater negative effect – non-point source pollution.

Non-point source pollution, or "people pollution", cannot be associated with a distinct source but comes from many diffuse sources. It is a product of human activities, such as driving and washing automobiles and boats, maintaining lawns and gardens, constructing buildings and homes, altering the land, improper disposal of hazardous chemicals, and failing septic systems. These actions directly and indirectly affect the water quality of nearby waters that, in turn, will travel to the Sound. Because Long Island Sound's watershed is large and highly populated, the amount of non-point source pollution entering water bodies that drain into Long Island Sound is quite significant.

Non-point source pollution causes many of the same problems as point-source pollution, the only differences are that it is difficult to pinpoint its exact source and that it is far more difficult to prevent. Non-point source pollution adds extra nutrients, sediment, bacteria, toxins, and heavy metals to the Sound. This can stress and kill organisms and it adds to poor water quality resulting in such problems as hypoxia.

Why protect Long Island Sound?

Long Island Sound provides more than five billion dollars to the region's economy. People enjoy the recreational, economic, and aesthetic values of Long Island Sound, which are part of the region's culture. The Long Island Sound estuary not only provides recreational, economic, and aesthetic values, but it supports a wide variety of habitats. These habitats provide food and shelter for plants and animals as well as protect humans from the full force of storms. As more and more people choose to live and vacation in the region, human impacts to the Sound will also increase. It is critical that humans evaluate their activities at home and work to minimize their impact on the watershed and the Sound. The Sound is an important to the region's natural, recreational, and economic vitality; it is the region's greatest natural resource. It is our responsibility to protect and restore it so that it remains viable for future generations.

[B] **DETERGENTS**

Detergents can seriously affect the water quality of local waterways. They are a universal contaminant of public water supplies. Some of pollutants they contain are as follows: phosphates, sodium, potassium, boron salts, enzymes, cellulose ethers, flurescers, silicates and sulphates with phosphates being the biggest offender.

When in sufficient quantities, detergents, even the biodegradable ones, can have a toxic effect on a wide variety of marine life! All detergents ruin the protective external mucus layers of fish, leaving the animal highly susceptible to bacteria and parasites. Furthermore, the detergents can cause extreme damage to the gills, thus making respiration very difficult if not impossible. Detergent concentrations as low as 5 parts per million will kill fish eggs and concentrations near 15 parts per million, will cause most fish to perish. Other aquatic life falls prey to the lower water surface tension caused by these detergents. When surface tension is low, fish can easily absorb organic chemicals such as pesticides and phenols. A detergent concentration of only 2 parts per million can cause fish to absorb double the amount of chemicals they would normally absorb.

ACTION

- Eliminate all outdoor detergent discharges
- Switch to a natural, chlorine-free, phosphate-free, non-petroleum based detergent (liquid laundry soaps usually are phosphate free); if in a crunch, look for detergents with less than 0.5% phosphates
- Look for pure soap or soap-based dishwashing and laundry substances; unscented soap in liquid form, flakes, powders or bars is biodegradable and will clean just about anything. Avoid using soaps which contain petroleum distillates
- Measure laundry and dishwashing detergents carefully and use only the recommended amount or less. Use the 'suds saver' on your washing machine if available (this recycles the washing water).

C **PHOSPHATES**

Phosphates are minerals that act as water softeners and are among the worst of the pollutants found in detergents. Because they (the phosphates) are a nutrient and act as a fertilizer for algae, when it enters a water body it promotes the growth of plants, primarily algae. When there is an excess of nutrients, in this case the phosphates, algae blooms occur clouding the water, causing odors and creating hypoxic conditions. Even after treatment, some detergent ends up as pollution in waterways, therefore, the discharge of detergent laden water into storm drains, either through directly dumping or indirectly allowing such water to flow into those drains, furthers the problem in trying to

control phosphate releases. Their use is a continuous addition to the general contamination of our water supplies.

Phosphate-free detergents are readily available and some states have banned the use of phosphates in all detergents (liquid laundry soaps usually are phosphate free) other than automatic dishwasher detergents.

[D] **PHENOLS**

Phenol (fe-nol) is a caustic poisonous crystalline compound derived from benzene and used in resins (like those found in the plywood, construction, automotive, and appliance industries), plastics, and pharmaceuticals.

- Some Effects: [D]
  - Phenol is considered to be very toxic to humans through oral exposure, with ingestion of 1 g reported to be lethal, with symptoms including muscle weakness and tremors, loss of coordination, paralysis, convulsions, coma, and respiratory arrest[D]
  - Blood changes, liver and kidney damage, and cardiac toxicity including weak pulse, cardiac depression, and reduced blood pressure have been reported in humans acutely exposed to phenol by the oral route.[D]
  - In Animal reduced fetal body weights, growth retardation, and abnormal development in the offspring of animals exposed to phenol by the oral route was reported. Decreased maternal weight gain and increased maternal mortality were also observed.[D]
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Long-term inhalation exposure to phenol in animal studies has shown effects on the liver, kidney, respiratory, cardiovascular, and central nervous systems[D]

[E] **Make Your Own**

Disclaimer

We try very hard to make sure that all recipes are 100% accurate but typos and other errors may occur, therefore, you use the recipies and information provided within this site **at your own risk**, we bear no responsibility for the results of possible errors.

When following a recipe, always try it on a small area first to test for colorfastness and material durability. Always wear gloves! We tried to provide you with safer alternatives than traditional products, however, some individuals may suffer from allergies or sensitivities, so please exersice personal care when making or using items listed.

Car Wash Concentrate: Cleans and shines.

1-cup natural, chlorine-free, phosphate-free, non-petroleum based liquid dishwashing detergent
3/4 cup natural, chlorine-free, phosphate-free, non-petroleum based powdered laundry detergent
3 gallons water

1) Mix in a bottle; 2) To use, combine 1/2 cup of the concentrate with the water. If a stronger solution is desired, slightly reduce the amount of water.

Car Wax:

To avoid over drying, wax your car one section at a time.

½ cup melted ceresin wax
2 tbsp. melted yellow beeswax
2 cups turpentine
1 tbsp. pine oil

1) In a double boiler, heat the ceresin wax and beeswax. Stir, and then allow to cool until the mixture starts to harden. Stir in the turpentine and pine oil.
2) To use, apply with a rag; polish with a soft cloth.

[F] **SALT**

Road Salts are composed of ferrocyanide, potassium chloride, sodium chloride, magnesium chloride, and calcium chloride salts. The main component of road salt is the same table salt used for food, and while the only probable human affect of road salt is the adverse taste of contaminated roadside well waters, its effect on vegetation, wildlife and water quality can be devastating.

These salts enter the environment through use on roadways, streets and sidewalks and through the disposal of waste snow. The runoff of melted snow can result in high concentrations of chlorides in surface water. After a week's exposure to concentrations of 1,000 mg/l,[F] Rainbow trout perish. Approximately 10 % of aquatic species are harmed

by prolonged exposure to chloride concentrations greater than 220 mg/l. Additionally, high concentrations of chloride can increase the presence of metals in the waters and prevent the distribution of oxygen and important nutrients. Salts have been shown to damage vegetation as far as 162 feet from roadways that were treated, thus plant species susceptible to damage by salt are disappearing along roadways. As plants die, wildlife can be affected and road salt can have both behavioral and toxic impacts on animals and birds.