

Chapter 2 - Environmental

▶ History

Well it all started many years ago when Congress passed the Federal Clean Water Act in 1972. This was in response to major pollution issues involving polluting the nation's waterways from factories, strip mining and sewage treatment plants or lack thereof. It was actually quite a problem. It was an ecosystem disaster causing disease and death to wildlife and some people. When it was discovered just how bad the problem really was, the federal government empowered the states to take care of the issues within their state. The states enacted state laws to help fix the problem. Meanwhile, the federal government tightened standards forcing states to tighten their standards or be in violation. With the threat of withholding federal monies to the states, the states continued to make more and more laws. Industry obviously wasn't happy and even government agencies were unable to comply with the laws they made. So, target dates were enacted to give time for everyone to comply.

Overnight environmental consulting firms sprung up along with a whole new industry of environmental equipment and product manufacturers, many of whom weren't even in compliance themselves. Of course, all good things take time and cleaning up our water is obviously a good thing.



The State of California divided the state into five different regions realizing that each region had different pollution problems based on industry types, demography and population in the areas. These regions were called 'Regional Water Quality Control Districts' (RWQCD). These were all controlled by the State Board that was defined by the Federal Clean Water Act as the State Water Resources Control Board (SWRCB). Once the problem was broken down into smaller pieces things started to change for the better.

The SWRCB was formed in California and is commonly called 'The State Board'. The State Board regulates Water Quality Control which is any activity or factor that might affect the quality of waters of the state and includes the prevention and correction of water pollution and nuisance. This sounds very encompassing and the State Board has a lot of power. Luckily, with the combined efforts of industry, government and the people, they now understand the issues enough to make intelligent decisions and they fully understand that your organization needs to earn money. Thus, rather than prevent and outlaw activities, everyone is working on solutions and procedures to allow responsible discharges creating a win-win situation for everyone.

Recently, the State Water Quality Control Boards asked the counties to submit for approval and receive permits to discharge the same waters they've been discharging for years. These permits were called NPDES permits. This stands for National Pollution Discharge Elimination System. Most counties assigned an existing department to work on this permit. More likely than not, it is the county's Flood Control Department. Unfortunately, this part of the county deals with permits for land development, bridges, infrastructures, etc. Until now, they knew very little about pollution. Some counties turned this responsibility over to the Environmental Health Services Department who in turn worked with the Flood Control Department which controls storm drains. The NPDES permits are approved by the state for local county urban runoff discharges. Each city in each county

through municipal codes is supposed to pass ordinances and come up with a plan for controlling their local runoff/pollution. The county remains responsible to the state and the states to the Federal Government. The NPDES requirements are an offspring of the EPA, Environmental Protection Agency, even though they are enforced, permitted and regulated locally by cities, counties and states.

The actual law that is used to enforce these statutes can be found in 13.260 – 13.265 of the California Water Code. At one point it actually reads:

The Regional Water Quality Control Boards can look at everything on a case by case basis. So do be serious about your water after you wash those cars.

“No person, or persons may discharge water to any waterways without permission or a permit from a state regional water quality control board.”

This sounds pretty absolute doesn't it. It is against the law for you to take a glass of water from your sink, walk over to a storm drain and pour the water in the drain. This in itself would obviously not hurt the environment, but by granting absolute power the Regional Water Quality Control Boards can look at everything on a case by case basis. So do be serious about your water after you wash those cars.

► Storm Water Discharge

City, county and state governments know that car washing has always been a favorite fundraiser for sports teams, scout troops, schools and other non-profit groups. Due to the low capital investment costs, car wash fundraisers can generate significant amounts of profit. For the last ten years government agencies especially in California have been working with industry to come up with solutions to clean up our water. Today the waterways of America are significantly cleaner than they were in the past even though many regions are more heavily populated. It's been working great. Now we are going one step further. No pollution from any source, even mobile dog groomers. Only in the last few years have government agencies decided that the adverse environmental impact is too great to allow car wash fundraisers. Along with strong lobbying from fixed site car wash owners, some cities and counties have actually outlawed these fundraisers unless certain procedures are followed to insure that no waste wash water enters storm drains, ditches or waterways.

Their reasoning is this: dirty water containing soaps and detergents, and residues from exhaust fumes, gasoline and motor oils is washed off of the cars and flows into nearby storm drains. Unlike the water we use in our homes and businesses that goes down the drain and is treated at sewer treatment plants, water that goes into storm drains flows directly into rivers, bays, oceans and lakes without any kind of treatment. Obviously one car wash fundraiser by itself will create little if any adverse environmental impact. But government agencies know that collectively car wash fundraisers contribute significant pollution. They also realize that biodegradable soaps do not lessen the impact. This is because biodegradable only means that the soap will degrade over time. So does plutonium, it just takes longer. Soaps and car wash products are still toxic to aquatic life even if they are biodegradable.

No matter how you feel about the government's philosophy on car wash fundraisers, we suggest that you follow some of the following Best Management Practices (BMP's) especially if your city or county regulates such discharges. They might not and a little soap is actually good for the environment. I suggest you use a coconut based soap or citrus based soap. You might even try Liquid Organic Cleaner (L.O.C.) from Amway. It doesn't form a lot of suds but it works great and won't hurt the environment or the fish if a little run off (car wash waste water effluent) finds its way into a storm drain. If you are in a city or county that regulates discharges from car wash fundraisers, such as Los Angeles or San Francisco, you are going to have to follow the rules.

We suggest that you use the following methods to contain your waste wash water and prevent the effluent from entering near by storm drains or waterways. We call these methods "Best Management Practices" or "BMP's". Your goal should be not to let any water containing soap enter any storm drain. With this goal in mind, you should proceed and have a great fundraiser and earn those much needed monies that your organization deserves.

BMP #1: Block off the storm drain. Try to wash the cars at the highest point, hopefully a flat surface area. At the end of the day after most of the water has evaporated, pump the remaining the water into a sanitary sewer drain. If you are at a gas station, they might have a dump for R.V. toilets. A clarifier is also good. Maybe a restroom toilet. On a sunny day most of the water will evaporate. If no one in your group owns a water pump ask the local wastewater authorities if you may borrow a pump for your event. Or vacuum up the water with a shop vacuum.

BMP #2: Select a site where the cars can be driven onto grass or gravel before washing. This way soapy water can filter through vegetation and soil before entering ground water or running off into the drainage ditch or storm drain.

BMP #3: Have a great car wash but don't use any soap.



BMP #4: Block off the storm drains and pump left over waste water onto the grass or into the planters thereby water the landscaping. Let most of the water evaporate before pumping so you don't overflow the planters.

BMP #5: Pick a location where water runs off into a field or landscape directly after the pavement ends.

► What's in the Water?

Well, first of all, we have chlorine in our tap water. There is also magnesium and calcium. And that's before you even wash one car. If you spray the hose in the air that's what's in the water

before it hits the ground. Due to the calcium and magnesium in the water in California, especially Southern California, it is necessary to soften our water. The chlorine and fluoride that we add to our water doesn't help any either. Hard water spots are a major problem. Just park your car next to your sprinklers at home and you will see exactly what we are talking about. If your car is a dark color and you park it in the sun, the hard water spots will etch themselves into your clear coat and cause permanent damage to your paint job. The chemicals bake into the paint.

The desert cities such as Lancaster, Palm Springs, etc. have a major problem with this. You see, when it's 115° F in the shade, the cars dry in three minutes. Luckily, multiple dryers can dry a car in two minutes. A crew of two can stay on top of it by drying most cars in one to one and one-half minutes. The main problem is soaping. The soap dries before you can rinse it off and the water evaporates out of the soap bucket every fifth car. The sprayer has to follow the soaper around the car which is good because, by the time they are done, they're hot. They can take turns spraying each other off.



If you have ever taken any chemistry classes, you know that just about everything is water soluble eventually. Water can combine with almost anything and make some pretty weird compounds, none of which are particularly good for the environment.

What is considered hard water and what are the degrees of hardness? You can use this table to get an idea of what we are talking about:

Degree of Hardness	Grains Per Gallon	Parts Per Million
Very Hard	10.5 and Above	180 and Above
Hard	7.0 to 10.5	120 to 180
Moderately Hard	3.5 to 7.0	60 to 120
Slightly Hard	1.0 to 3.5	17.1 to 60
Soft	Less than 1.0	Less than 17.1

The hardness in water is caused by calcium and magnesium ions that form insoluble compounds. Also, you can find iron and even traces of aluminum in our water. Our water is some of the clearest and cleanest in the world. It comes from the DWP (Department of Water and Power) and the MWD (Metropolitan Water District). Actually it doesn't really come from there. It starts out as rain, drains to lakes and rivers and is brought to the people by canals, pipes and pumping stations.

So that is exactly what's in the water before the wash. Now here is what may be in the water after the car wash. 6-22 mg/l of oil and grease. Usually this doesn't come off the car. This is what is on the ground already that the water washes away. Yuk! How would you like to drink that in your bottled water. There are also suspended solids (TSS) with concentrations of 35-151 mg/l. Most of that is dirt, yet we can never know where each car has been and what's in that dirt (i.e. bird droppings). There will also be foaming agents (soap) with concentrations of 0.3-1.41 mg/l which is

very low. Yet, I wouldn't want to drink it or use it to make ice cubes. There probably isn't but there could also be toluene, ethylbenzene and benzene. These are wicked ingredients that you definitely don't want floating around in your puppy's water bowl or your wife's cappuccino. All other run off from car washes meets the drinking water standards and is certainly not going to adversely affect wild life or kill any ocean going fish.

The Regional Water Quality Control Board is not the only governing body concerned with water discharges. The Coastal Commission is also very concerned as well as the Department of Fish and Game. Both agencies have authority to issue civil penalties for water pollution.

For more information on water quality you can contact:

California Department of Fish and Game	PS Enterprises ¹
Marine Resources Division	1315 3rd Street Promenade, Suite 403
330 Golden Shore, Suite 50	Santa Monica, CA 90401
Long Beach, CA 90802	Phone (310) 393-3703
FAX (310) 590-5193	FAX (310) 393-7012

Los Angeles Regional Water Quality Control Board
 101 Centre Plaza Drive
 Monterey Park, CA 91754
 Phone (213) 266-7500

► Car Wash Products

How do I know if the products I'm using are safe for the environment?

That's a good question. The answer is they aren't, and no product is allowed in the storm drain. So your next question is, "If I use the waste wash water to water the grass in front of the school or a flower bed near a gas station, how do I know if it will kill the grass or plants?"

This question we can answer. Every product has a Material Safety And Data Sheet (MSDS). Read through the sheet and see if the diamond at the top of the sheet has a number higher than one in the box on the left. If it does, it will affect organic life. Look for products that have only ones or zeroes in the boxes in the diamond code at the top.

¹ They manage the City of Los Angeles storm water discharge and have additional material and can serve as an educational resource.

Material Safety and Data Sheets (MSDS sheets) contain nine sections. These sections are:

- I. General Information
- II. Ingredients
- III. Physical Data
- IV. Fire and Explosion Hazard Data
- V. Health Hazard Information
- VI. Reactivity Data
- VII. Spill, Leak and Disposal Procedures
- VIII. Special Handling Information
- IX. User's Responsibility

At the top of each sheet is a square on end. It looks like a diamond shape. It is broken into four squares inside this diamond shape. The squares mean:

- Top Square (Fire)
- Left Square (Toxic)
- Right Square (Reaction)
- Bottom Square (Special)

In each square there is a number from zero to four. The numbers equal:

- Four = Extreme
- Three = High
- Two = Moderate
- One = Slight
- Zero = Insignificant

This indicates how safe or volatile the product is. It also gives you an indication of whether the fumes are dangerous, if it is flammable, if it will react adversely with other chemical or if it is radioactive or biologically unsafe.

Section I, the general information section, contains information such as:

- Who prepared the MSDS Sheet
- The product's trade name and type of chemical
- Which chemical family the product belongs to
- Basic formula
- Name and address of manufacturer
- DOT shipping classification
- DOT Hazard classification

Section II contains ingredients. Generally only hazardous ingredients will be listed. It will normally be in chart form:

- Name of component
- CAS number
- Percentage of hazardous chemicals
- Concentration in parts per million

Section III contains physical data, things that you probably learned in chemistry class:

- Boiling point
- Vapor pressure
- Vapor density
- Solubility in water
- Odor
- Appearance and color
- Gravity in terms of water
- Percentage which is or could be volatile
- Reactivity, if any, in water
- Ph Level

Section IV contains fire and explosion data such as:

- Flash point
- What will extinguish it if it catches fire
- Flammable limits
- Any special fire fighting procedures
- Any unusual hazards regarding fire and explosion

Section V contains health hazard information and what happens when:

- Product vapor is inhaled
- Product comes in contact with skin, eyes, etc.
- Product is swallowed

It tells you what symptoms to expect and what should be done including any first aid or emergency procedures.

Section VI contains information regarding the product's reactivity with other elements and common compounds. It discusses conditions to avoid, the product's stability or instability and its decomposition.

Section VII contains information regarding spill response procedures including any special state, federal or local laws to be met.

Section VIII contains information regarding special handling. It is basically a catch-all section for anything not covered by other sections. Items such as:

- Respiratory Protection
- Eye Protection
- Gloves
- Ventilation
- Engineering Controls

are not uncommon in this section. Sometimes you will find equipment discussed here. Special equipment that the manufacturer recommends for CYA purposes in case something goes wrong.

Section IX contains information regarding the user's responsibility. It is a disclaimer section that manufacturers generally use to avoid lawsuits. Usually they pass the buck by saying people using this product should maintain a safe work place at all times and have in written form a safety manual for employees, workers and independent contractors.

Following all these sections is a blown out of proportion disclaimer usually written in plain English by an attorney releasing the product manufacturer from any responsibility what so ever and further more disavows the manufacturers from any mistakes in the MSDS sheet therein.

If all this sounds too complicated, go find some coconut soap, citrus cleaner or Liquid Organic Cleaner (L.O.C.) from Amway and use those. You can actually drink them if you had to and still wake up the next morning. You might get the runs but they definitely won't kill you. As a matter of fact, I've seen nice bright green spots in the grass where we've discharged our waste wash water.

► Water Conservation

Now that we will have cleaner waste water run off from our car wash fundraiser, we need to look at ways to conserve the water we use.

If you wash your car in your driveway with a garden hose and shut-off nozzle, you will use five gallons of water to fill your soap bucket to get suds. You will then wet down your car for two minutes or more, soap your car and then rinse the car for four minutes or more. If the garden hose has 60 PSI of pressure or more it puts out a minimum of ten gallons of water per minute (GPM). The total amount of water usage is as follows:

Total Amount of Water Usage For A Typical Car Wash at Home

5 Gallons in the bucket
20 Gallons to wet the car @ 10 GPM
+ 40 Gallons to rinse the car @ 10 GPM
= 65 Gallons of water

This would be a very water conscious person in good shape who can move briskly around the car. This person would have at least sixty gallons moving down the gutter into the storm drain.

► Using A Pressure Washer Vs. A Garden Hose

If you use a pressure washer during your fundraiser you can wash twenty cars with one capful of soap in a two-thirds filled five gallon water bucket. Of course your soap will be biodegradable. At least twenty-five percent of the cars you wash will not require the use of soap due to previous wax coats that have been applied. These cars combine to lower your wet/rinse cycle to about thirty seconds of spray time or 1.2 gallons of water per car. This is fifty times more efficient. You can wash fifty cars with a pressure washer to the one car washed with a garden hose in the driveway. This constitutes a significant savings in water.

If you spray a car with special equipment (pressure washer) you will get a fine mist spray. The water can be applied evenly and gives the run off a spread effect. Thus, the water that reaches the ground evaporates quickly. A car that needs to be soaped will have a wet/rinse cycle of about one minute and will use about two gallons of water. This water never reaches the storm drains.

You can also contract with a local professional mobile car washer or car detailer to help your group. They only use 2.4 gallons of water per car and their pressure washers only put out 2.4 GPM. If they spray a car for twenty seconds to get it wet, then soap off the dirt and then rinse the car for approximately forty seconds this equals sixty seconds or one minute of sprayed water at 2.4 gallons per minute.

Working with a local professional can be very efficient. You can also purchase a pressure washer from a large department store and do it yourself. By the time you've washed 150-300 cars at a fundraiser you too will become very efficient with the water. Look for a pressure washer that puts out 1,500 PSI (pounds per square inch). Gasoline driven units are best, but electric units are about one-half the cost. Remember, if you plan on buying an electric unit make sure that you have an outlet near your designated wash area. Expect to pay \$300 for a good electric unit and \$500 to \$800 for a decent gas unit.

You may also be able to borrow a pressure washer from a local painting contractor. They use them a lot to clean the exterior of homes and commercial buildings before painting. See if someone in your group has a parent who is a painter. Maybe they will volunteer to act as a sprayer during your fundraiser since they have experience using this type of equipment.

If you will be using a straight garden hose remember that fundraisers generally use approximately 3,600 gallons of water; 360 minutes @ 10 GPM. So use shut-off nozzles or kink the hose when you're not spraying. If you use a pressure washer you will cut your wash time in half, thus, allowing you time to do twice the number of cars and earn more money. You will also have a lot less water to worry about that might be going into the storm drain.

If you spray a car with special equipment...you will get a fine mist spray. The water can be applied evenly and give the run off a spread effect. Thus, the water that reaches the ground evaporates quickly. A car that needs to be soaped will have a wet/rinse cycle of about one minute and will use about two gallons of water. This water never reaches the storm drains.

At one fundraiser using a pressure washer, we washed 520 cars with 950 gallons of water in six hours. Approximately 150 cars with 3,600 gallons of water is generally the maximum amount of cars washed at this type of function using conventional methods. At this particular fundraiser we washed three and one-half times as many cars with one-third the water. We saved the City of Thousand Oaks, California 2,650 gallons of water that day and made the kids a substantial amount of money.

Fixed site car washes also conserve their water. That is why they are allowed to stay in business during a water shortage. They use seventy gallons of water per car during their complete car wash cycle. Four gallons of water is used during the pre-wash cycle. Sixty-six gallons of water is used during the soap/rinse cycle. Nearly two-thirds of the soap/rinse cycle

water can be recycled. These approximately forty-four gallons of water are captured in a 10,000 gallon storage tank where they are used over again for car washes for the next three days. This dirty water is mixed with white sudsy soap and used during the car wash soap cycle. The average fixed site car wash uses four gallons (pre-wash) plus twenty-two gallons (sixty-six divided by two-thirds that is recycled) in the soap/rinse cycle bringing the total to twenty-six gallons of water per car. In the car washing industry this constitutes extreme efficiency.

If you are extremely careful with your water usage during your fundraiser, you can beat even the best recycling car wash which still uses around fifteen gallons of water per car. And some self-serve car washes claim they use as little as 6.2 gallons of water per car.

Remember the techniques discussed in this book:

- Block Off Storm Drains
- Utilize Efficient Equipment
- Use Bio-Degradable/Non-Hazardous Soaps
- Remove Trash From Wash Area When Finished

“If we all do a little, it will help a lot.”

For more information on water conservation, please feel free to contact the public relations department of:

Metropolitan Water District
P.O. Box 54153
Los Angeles, CA 90054-0153

Cal Fed Program
8:00am – 5:00pm
(916) 657-2666
Hotline: (916) 654-9924
<http://www.calfed.ca.gov>

Department of Water and Power (DWP)
Energy, Efficiency and Conservation Hotline
(800) 827-5397

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