AUSTRALIAN CAR WASH ASSOCIATION

STORMWATER STATEMENT

ACWA's Mission is to support and encourage responsible vehicle washing which minimizes water usage and prevents pollution of our waterways.

The Australian Car Wash Association has worked with many State Water Authorities for a number of years devising a response to drought. ACWA's response is acknowledged as world best practice.

Consistent with our desire to create a sustainable water future, the Association now wishes to work to create a sustainable vehicle wash pollution policy as part to its overall environmental responsibility.

It is ACWA's objective to educate the community about environmentally sustainable car wash practices through ACWA sponsored campaigns and partnerships with environmental organizations and relevant Local, State and Federal authorities

A key part of this education process is to recognise and understand the effects of washing vehicles on hard surfaces where waste runoff goes to stormwater.

- It is estimated that between 6 and 11.6 Giga liters of contaminated waste water is being directed into our storm water systems across Australia as a result of uncontrolled vehicle washing on hard surfaces (passenger vehicles only, excluding commercial and other vehicles)
- Contaminated waste water is known to negatively impact the environment and water quality. Stormwater in general is recognized as the biggest threat to marine environments. Most water authorities and councils have the objective to reduce contaminated stormwater volumes in urban areas.
- To determine the pollutants in stormwater, scientific tests were conducted on waste water collected under stringent testing conditions at commercial car washes and from cars washed in the street.
- In contrast to home washing, all commercial car washes are required to direct their waste water to sewer, from where it is treated to protect the watershed from impacts of pathogens, heavy metals, detergents, oil, grease and grime that are in car wash waste water.
- All State & Federal Governments and opposition parties are committed to long term sustainable water solutions.
- Environmental authorities, Water Authorities and Local Councils alike are aware of the negative impact of contaminated waste water entering the storm water system, but do not see home car washing as a high enough priority to improve public awareness, enact appropriate laws or enforce existing laws.
- ACWA is dedicated to work with authorities and organizations to change laws, improve awareness and educate public perception.

The objective of this paper is to share data regarding wastewater discharges, as well as contaminant levels in solid and liquid wastes. This report presents the overall findings of several studies undertaken by ACWA and others and includes the results of water quality testing of effluent of professional car washes and studies where effluent from street car washing was collected.

Stormwater is the water that is collected in drains from street runoff carrying with it a range of pollutants including sediments, pathogens, nutrients, hydrocarbons, heavy metals and chemicals from various activities. These pollutants are deposited into rivers, estuaries and bays with no treatment and significantly degrade river, estuary and bay water quality and aquatic habitat.

The impacts of stormwater are cumulative in that thousands and thousands of individual sources of pollution are combined to cause this contamination.

The information presented in this paper is a collection of the information in the sources quoted at the end. The findings of these studies and the conclusions of this paper show that waste wash water from residential car washing is a considerable source of stormwater pollution. It also demonstrates that any single uncontrolled residential car wash activity might be inconsequential with respect to its contribution to the pollutant load being delivered to stormwater, however, when extrapolated over an urban area for a year, the pollutant loading becomes very significant.

This paper gives an indication of the impact of home car washing across the whole of Australia.

The critical pollutants are summarised as follows;

- Petroleum hydrocarbon waste: gasoline, diesel, and motor oil
- Total Organic Carbon
- Copper
- Lead
- Zinc
- Surfactants
- Suspended Solids

Often society has been slow to recognize the link between individual behaviours and practices, and the detrimental impacts that they may have on our natural aquatic resources. Home car washing is one of these. In some instances, car washing is carried out on lawns, which allows for the infiltration of the wash water. However, in most cases, it is performed on impervious surfaces where the wash water drains directly into the stormwater system.

The following is a brief discussion concerning several of the crucial pollutants detected, the calculated annual pollutant loading for Australia as a whole, with it's consequential impacts water quality. Notable in the ACWA studies is the impact of reduced volume of car washing during drought restrictions so both drought and non drought conditions are quoted. The volumes and concentrations shown here are as they leave the car.

Petroleum hydrocarbon waste: petrol, diesel, and motor oil *(estimated 30 tonnes in drought to 58 tonnes in non drought of annual mass loading).* Compounds in petroleum hydrocarbons are highly toxic, and in the surface water environment, they can cause harm to wildlife through direct physical contact, contamination by ingestion, and the destruction of food sources and habitats. Bottom-dwelling or bottom-feeding aquatic organisms may ingest petroleum contaminants and transmit them up through the food chain until they accumulate in dangerous concentrations in fish. Hydrocarbons also harm fish directly, and damaged fish eggs may not develop properly. Additionally, oil can be particularly problematic because a single spilled cup can contaminate the surface area of a water body the size of a football field.

Total Organic Carbon *(estimated 356 tonnes in drought to 688 tonnes in non drought of annual mass loading)* This is a measure of the carbon bound in organic material and indicates the oxygen demand created by organic material decomposing in water. Sufficient levels of dissolved oxygen in water is necessary to maintain aerobic conditions necessary to support aquatic life. The concentration of 59 mg/L exceeds typical water guidelines of 10 mg/L.

Dissolved copper *(estimated 1,800 kg in drought to 3,500 kg in non drought of annual mass loading).* Exposure to dissolved copper may be sufficient to impair the sensory biology of some fish and has other toxic impacts to a wide variety of marine life. Dissolved copper is also toxic to phytoplankton, the base of the aquatic food chain. The concentration of .3 mg/L exceeds the ANZECC guidelines for 95% in marine waters of .0013 mg/L.

Lead *(estimated 121 kg in drought to 233 kg in non drought of annual mass loading)* Lead is a poisonous metal that can damage nervous connections (especially in young children) and cause blood and brain disorders. In marine environments it can cause anemia, depressed growth, fin degeneration and reduced egg hatching success. The concentration of .02 mg/L exceeds the ANZECC guidelines for 95% in marine waters of .004 mg/L.

Zinc *(estimated 3,000 kg in drought to 5,800 kg in non drought of annual mass loading)* Zinc is most toxic to microscopic organisms in the aquatic environments. The concentration of .5 mg/L exceeds the ANZECC guidelines for 95% in marine waters of .015 mg/L.

Surfactants *estimated 160 tonnes in drought to 315 tonnes in non drought of annual mass loading).* In surface water environments, surfactants are acutely toxic to aquatic life, stripping fish gills of natural oils, thereby interrupting the normal transfer of oxygen.

Suspended solids *(estimated 1,200 tonnes in drought to 2,330 tonnes in non drought of annual mass loading).* Sediment, the most common pollutant in stormwater runoff by volume and weight, makes streams and lakes less suitable for recreation, fish life, and plant growth. Sediment is of particular concern in fish-bearing streams where it can eggs, destroy habitat for insects (a food source for fish), and cover prime spawning areas. It reduces the amount of light in the water available for plant growth and thereby reducing the supply of food for other organisms. The concentration of 200 mg/L is almost 10 times higher than the ANZECC Guidelines in marine waters of 20 mg/L. **Turbidity** is the measure of the cloudiness of water and has similar consequences to suspended solids. The measure of 80 NTU exceeds typical water guidelines of 5 NTU.

Even though commercial car washing facilities employ water treatment systems and in many cases recycle the wastewater, surveys conducted by the International Carwash Industry and the ACWA from 1999 to 2008 indicate that the majority of home washers consistently feel that residential car washing is better for the environment than commercial car washes. From this information, it appears that more effective public education efforts will be needed to affect sufficient behaviour changes to reduce discharges caused by home car washing activity.

The survey data also indicates that people will act in a more environmentally responsible way as more accurate information is attained. Specifically, in response to the question *Do you think that knowing commercial car washes can be more water efficient and less polluting would influence you to use commercial car washes more in the future?* The majority in the ACWA Survey of Car Washing Habits and Intentions, Oct 2008 said yes.

Conclusions

The results of this paper show a dramatic amount of pollutants from home car washing going into Australia's streams, rivers, lakes, estuaries and coastal waterways. The ACWA is of the belief that this is an untenable situation and must be addressed by environmental authorities. In most states activities that put the above pollutants in the described concentrations into the storm water system are illegal. At a minimum a public perception campaign to change behaviour should be undertaken to limit the practice of washing cars on hard surfaces and promote the washing of cars on porous surfaces and to encourage the more environmentally sustainable practice of washing cars at a commercial car wash

Sources

ACWA, Survey of Car Washing Habits and Intentions, Oct 2008

ACWA, Recycled Water in Commercial Car Washes. July 2009

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Brown, C., Water effluent and solid waste characteristics in the professional car wash industry, International Carwash Association, 2000.