BEST MANAGEMENT PRACTICES

Two authorities have emerged for the implementation of various BMP's related to construction; Caltrans and the California Stormwater Quality Association(CASQA). Both entities have similar BMP guidelines relating to concrete washout containment and specifically address Concrete Waste Management (WM-8) and Liquid Waste Management (WM-10), and their key points are summarized below.

Concrete / Liquid Waste Management WM-8 / WM-10

- Implemented when concrete is used as a construction material. or slurries are generated from saw cutting, etc.
- Do not wash out concrete trucks into storm drains, open ditches, streets or streams.
- Slurry residue should not be allowed to enter storm drains or watercourses, should be vacuumed and disposed (WM-10).
- Temporary concrete washout facilities shall be constructed with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations.
- Plastic lining material should be a minimum of 10 mil polyethylene sheeting and should be free of holes, tears or other defects that compromise the impermeability of the material.
- Washout facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.
- Contain liquid wastes in a controlled area, such as a holding pit, sediment basin, roll-off bin, or portable tank.
- Containment devices must be structurally sound and leak free and must be of sufficient quantiity or volume to contain all liquid wastes.

THE CWS SOLUTION

CWS has established itself as the Best Available Technology (BAT) and the Best Management Practice (BMP) when it comes to concrete washout and wastewater containment and recycling. Our washout systems are the preferred BMP on construction sites as they reduce operation costs, reduce the mess and headache associated with other measures, completely contain all wastewater and washout material from concrete trucks and pumps and reduces a company's exposure to civil liability and associated fines.

LIABILITY & NON-COMPLIANCE VIOLATIONS

Homebuilder in Santa Ana Region - **Imposed Fine - $50,000**
Complaint No. R8-2003-0100 for Administrative Civil Liability

"…the concrete washout pit was not maintained and did not effectively contained concrete slurry…the concrete washout pit was full of solid waste and surrounded by concrete slurry"

Homebuilder in Central Coast Region - **Imposed Fine - $58,500**
Complaint No. R3-2003-0103 for Administrative Civil Liability

"Residual concrete from a washout area had apparently overflowed and left the site…Inadequate BMP's for the control of erosion and sediment."

Homebuilder in Santa Ana Region - **Imposed Fine - $55,000**
Complaint No. R8-2003-0024 for Administrative Civil Liability

"A milky white liquid was discharging from uncovered on site roll-off bin. The pollutants discharging from the bin had commingled with storm water runoff and migrated to a pretected area..."

NATIONAL READY MIXED CONCRETE ASSOCIATION

International Erosion Control Association
www.ieca.org

FOR MORE INFORMATION PLEASE VISIT: WWW.CONCRETEWASHOUT.COM

PROTECT OUR ENVIRONMENT

CONCRETE & CEMENTITIOUS WASHOUT WATER POLLUTION

CONCRETE WASHOUT SYSTEMS

THE FACTS, THE LAW & THE CWS SOLUTION

CONCRETEWASHOUT.COM

WHAT IS CONCRETE WASHOUT?

Construction sites have long been identified as a large contributor to urban runoff pollution if the proper pollution prevention practices are not regularly performed. Materials washed into the storm drain have a direct impact on local waterways and habitat living in that environment.

The most common discharge into our storm drains from concrete construction is the residue and contaminants from washing down equipment such as concrete trucks, pumps, mixers, chutes, hand tools and wheelbarrows. It also comes from other cementitious type products such as grout, mortar and stucco.

CONCRETE WASH WATER IS CAUSTIC

Concrete or cementitious (mortar, grout, plaster, stucco, cement, slurry) washout wastewater is caustic and considered to be corrosive with a pH near 12, essentially the same as Liquid Dranoâ, Ammonia or other household cleaning detergents. The primary ingredient in ready mixed concrete is Portland Cement, which consists of Portland Cement Clinker, Calcium Sulfate, Calcium and Magnesium Oxide, metals and trace elements of potassium and sodium sulfate compounds, chromium compounds and nickel compounds. Contact with wet (unhardened) concrete, mortar, cement or other cementitious materials can cause skin irritation, SEVERE CHEMICAL BURNS (THIRD-DEGREE) or serious eye damage.

WHAT IS pH?

pH is a measure of how acidic or alkaline a substance is. The pH scale goes from 0 to 14, where 7 is neutral. A low pH value means the sample is acidic while a high pH value means that the sample is basic or alkaline. A change in one pH unit means a tenfold change in concentration, similar to the Richter scale and measuring earthquakes.

	pH	Example
Acids	0	HCl
	1	Stomach acid
	2	Lemon juice
	3	Vinegar
	4	Soda
	5	Rainwater
	6	Milk
Neutral	7	Pure water
Bases	8	Egg whites
	9	Baking Soda
	10	Tums® antacid
	11	Ammonia
→	12	Cementitious Wash Water
	13	Drano®
	14	NaOH

EFFECTS OF HIGH pH ON AQUATIC LIFE

The effects of high pH on fish may include: DEATH; damage to outer surfaces like gills, eyes, and skin; and an inability to dispose of metabolic wastes. High pH may also increase the toxicity of other substances. For example, the toxicity of ammonia is ten times more severe at a pH of 8 than it is at pH 7. The safe range for aquatic life is between 6.5 – 9.0 pH units. The average pH of concrete washout water is near 12 pH units.

EFFECTS OF HIGH pH ON VEGETATION AND SOIL

The effects of high pH on vegetation may include: inhibited growth, damage to soil and plants and substantial alteration of the soil and plant chemical composition even after the pollution source is gone. High pH may also increase the toxicity of other substances causing further problems. The safe range for plant life is between 6.5 – 7.0 pH units. The average pH of concrete washout water is near 12 pH units.

HIGH SUSPENDED SOLIDS COUNT

Concrete wash water is basically a slurry of fine Portland Cement particles in water or suspended sediments. When illegally discharged into a fish-bearing waterway, it will clog fish gills; reducing the amount of oxygen they receive which can ultimately lead to death. It can also smother aquatic habitat, impair their feeding ability and permanently damage the fragile ecosystem we enjoy.

Turbidity, which refers to water clarity, is related to suspended solids. In clear water, the turbidity is 0 NTU. The average turbidity of concrete washout water is 27,000 NTU. The average total of suspended solids in concrete washout water is 79,000 ppm.

IMPAIRED WATERWAYS IMPACT US ALL

40% of the waterways in the United States are still impared (unable to swim, fish, play or otherwise use the waterway) and 70% of those because of non-point source pollution (ie., concrete washout water). As construction in the United States and worldwide continues to boom, we are faced with a pollution problem of epedemic proportions. The building and concrete industries need to continue to combat this problem quickly, effectively and need to be armed with the most innovative and state of the art equipment and procedures available.

IT'S THE LAW

Construction sites generally can contribute 10 to 20 times more sediment than agricultural lands and 1,000 to 2,000 more times than forestlands. During a short period of time, construction sites can contribute more sediment than can be deposited over several decades, causing physical and biological harm to our Nation's waters.

The United States Environmental Protection Agency (EPA) and the California Environmental Protection Agency have stepped up their efforts to keepSWPPP's compliant to the US Clean Water Act and the National Pollutant Discharge Elimination Systems (NPDES). All of these criteria mandate the utilization of BMP's on construction sites. Potential discharges into the storm drain systems from concrete work has become a priority of the federal and state EPA, water quality control officials, regional and local inspectors as well as a strategic target of the advocacy and environmental groups.

Illegal discharges into our waterways can bring fines of $10,000 per day plus $10 per gallon and in addition, they can reach $27,500 per day if the US EPA becomes involved.